Globalization and Its Impact on Assessment: Moving Toward a New Story

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Abstract

Globalization has resulted in large-scale international and local assessments closely tied to notions of accountability and competitiveness in a globalized economy. Although policy makers seek to ensure citizens meet the demands of a global knowledge-based economy, such assessments may also impede the development of requisite 21st century skills. While standardization currently is viewed as the most effective measurement of student achievement, several Canadian and international jurisdictions are moving toward assessment *for* learning (A*f*L). This conceptual study sought to identify whether A*f*L or standardized assessment most effectively meets 21st century learning goals in the wake of rapid global change. It applies a Story Model theoretical framework to understand the current, the new emerging, and the future ideal story of education from a personal, cultural, and global lens. The study examines the main critiques and/or challenges of standardized testing, the benefits of A*f*L for student learning, and new teaching and assessment approaches to the development of 21st century learning goals. The study applies the Story Model's inside-outside/past-future approach to determine the future direction of assessment. Results show that the new story of assessment will most likely entail a model that integrates both standardized testing and in-class assessments in the form of A*f*L and PBL.

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CHAPTER ONE: THE PROBLEM

This paper examines the impact of globalization on assessment. As a secondary school English teacher, I have undertaken research on assessment because it constitutes an important part of my practice. I am expected to prepare my students for assessment in the form of the standardized EQAO literacy test, while engaging in the practice of assessment *for* learning (A*f*L). Through my research, I have sought to examine the direction of assessment within the context globalization. This study explores assessment in the form of standardized testing from the local perspective of EQAO and a global one of PISA and TIMMS, as well as assessment *for* learning from both a local and international context.

Global forces have brought about a dramatic expansion of national educational assessment and international assessment (Kamens & McNeely, 2010). An international consensus has arisen—largely in "developed" countries—which regards international testing and national testing as a legitimate and "necessary" means by which countries can determine the strength and weaknesses of educational systems, as well as their future direction. The extensive growth of national participation in international testing has been a feature of educational accountability (Wiseman, 2010). Educational accountability mainly entails a relationship between three primary stakeholders: taxpayers, elected officials, and teachers (Volante, 2007). In this relationship, the taxpayer holds the government and schools accountable by expecting evidence that indicates performance and a suitable return on investment (Volante, 2007). With respect to international testing, educational achievement in international studies has come to be viewed not only as a "fundamental indicator of national and educational legitimacy" (Wiseman, 2010, p. xii),

but also as a valid indicator of a nation's economic productivity and social welfare when results are compared cross-nationally. The media's dissemination of results on international assessments such as those of PISA and TIMMS focuses less on the value of the studies themselves than it does on associating the scores with the economic, political, and social competitiveness of a specific country or region (Wiseman, 2010). Pineda (2010) states that institutions such as PISA and TIMMS and their respective tests have had the effect of upholding "the paradigm of the knowledge-based economy, competition, accountability, and other global discourses that set national agendas for education worldwide" (p. 333).

Throughout the globe, the supposed need to test and/or administer standardized assessment has become a taken for "granted assumption" (Pineda, 2010, p. 335). As a result, governments in Canada and most of the Western world have come to utilize large-scale assessment programs as the primary, if not only, indicator of systems effectiveness (Volante, 2007). In my province of Ontario, the Educational Quality and Accountability Office (EQAO), which was established in 1995, administers large-scale assessment programs in literacy and mathematics for students in grades 3, 6, 9, and 10. The domains, which are tested, correspond to similar large-scale assessments in other Canadian jurisdictions and other countries in the Western world (Volante, 2007).

Currently, standardization is assumed by policy makers to be the most effective measurement of student learning, but countering this approach is the move toward A*f*L. According to Swaffield (2011), A*f*L "alludes to assessment as a process rather than an event, to planning for gathering information, to interpretation and reflection, to the agency of learners, and to the appropriate adjustment of future learning and teaching" (p.

436). A*f*L has gained international acceptance in both policy and practice (Swaffield, 2011). In Ontario and the Western provinces and territories, A*f*L encompasses assessment of learning, assessment for learning, and assessment as learning. The interest in A*f*L is international in scope as it can be found in the U.S., the U.K., New Zealand, Singapore, and Finland (Drake, 2010). This paper investigates which of these assessments—standardized or A*f*L—most effectively meets the demands of 21st century learning goals and a knowledge-based economy which has emerged in the wake of rapid global change. Furthermore, this research study explores how A*f*L can be most utilized to the fullest with respect to developing 21st century skills. This study examines whether large-scale assessment/summative assessment and A*f*L can be integrated to form a new learning model.

Background/Context of the Problem

From a professional standpoint, I have undertaken this study because I have encountered two counter-trends in assessment which seem antithetical to one another. I have been involved in preparing my students for the EQAO-administered Ontario Secondary School Literacy Test (OSSLT), which is a high-stakes assessment, from the beginning of my teaching career. In preparing my students for the OSSLT, I have caught myself "teaching to the test" to ensure that my students pass it; this is an approach which is at odds with my constructivist beliefs about education. At the same time, I am expected to practice A*f*L—in the form of assessment *f*or learning, *of* learning, and *as* learning—in my classroom as outlined in the Ontario Ministry of Education's (OME, 2010) *Growing Success* document. As an educator, I am also confronted with the professional obligation and conundrum of determining the most effective assessment and instructional strategies

to best prepare my students for the world in a period of globalization and rapid economic change. As an educator in a region that has lost its manufacturing sector, it has become increasingly apparent to me that traditional modes of instruction and assessment cannot prepare students for the knowledge economy (Robinson, 2011; Trilling & Fadel, 2009).

With globalization, there has occurred a profound economic change from Industrial Production to that of a Knowledge Economy. This economic transition has involved increased automation and the move of manufacturing jobs to countries such as China, India, and Brazil which have lower wages and fewer economic regulations. A growth in knowledge work well into the 21st century will accompany the loss of industrial work and will require individuals who possess a complex skill set (Trilling & Fadel, 2009). Robinson (2011) writes that "given the speed of change, governments and businesses around the world recognize that education and training are the keys to the future, and they emphasize the vital need to develop powers of creativity and innovation" (p. 6). Robinson argues that complex economies require "sophisticated talent with global acumen, knowledge of different cultures, technological literacy, entrepreneurial skills, and the ability to manage increasingly complex organizations" (p. 69). The move to a knowledge economy will require workers with expert knowledge skills; hence, this shift in the economy requires changes on the part of education systems. With respect to knowledge workers, Trilling and Fadel (2009) argue "that every country needs an educational system that produces them, therefore, education becomes the key to economic survival in the 21st century" (p. 6). According to Trilling and Fadel, a 21st century knowledge economy demands an education system that develops the following skills in students: critical thinking and innovation, communication and collaboration,

flexibility, social and cross-cultural interaction, and digital literacy. Because the global revolution requires individuals who can think creatively, innovate, communicate well, adapt, and work well in teams, education needs to be transformed so that it meets "the real challenges of living and working in the 21st century" (Robinson, 2011, p. 245).

Despite the need to transform learning for the 21st century, educational accountability and standardized tests may be viewed as obstacles to change as they focus on basic skills of reading and math at the expense of 21st century skills. Furthermore, a major force resistant to change includes the ingrained nature of teaching practices that have been upheld for decades or even centuries. This resistance may include parents who have been taught through the teaching practice of transmitting knowledge, and who wish their children to be taught in the same traditional way (Trilling & Fadel, 2009).

Statement of the Problem

The traditional approach to education, which places an emphasis on facts, rote learning, basic skills, and test taking, is ineffective in developing 21st century skills; specifically, it does not fare so well with respect to fostering creativity and innovation, collaboration and communication, or self-confidence (Robinson, 2011; Trilling & Fadel, 2009). A traditional approach to assessment has involved the utilization of high stakes, large-scale assessment to ensure accountability and provide evidence that both teachers and schools fulfill public expectations. The practice of administering traditional paper assessments not only impedes the development of 21st century skills but also fails to close the achievement gap between low-achieving students. The accountability measure of large-scale testing has significantly influenced classroom instruction as schools are burdened with the pressure of increasing test scores (Volante & Beckett, 2011).

Meaghan and Casas (2004) outline the following effects of standardization on the quality of teaching and learning: preparation for tests focuses on drills, practices, and test-taking activities, diverting time away from activities that develop problem-solving skills; standardized tests have the effect of narrowing the curriculum, as content taught is test oriented, and not presented in a manner to develop higher-order cognitive skills and problem-solving abilities; teaching practices that are effective in increasing test scores are often at odds with instructional strategies that develop reasoning, problem-solving skills, and creativity in students; standardized tests often apply a pressure upon students which differs from that of the daily classroom, often damaging students' self-esteem and motivation to learn; the format and procedure of standardized tests is diametrically opposed to collaboration or the collaborative interaction of students in the classroom; and standardized tests do not provide an indicator of students' deep understanding of a problem, but rather their ability to perform. There are also significant limitations to "on demand paper-and-pencil tests" as they cannot properly assess all the elements of learning (Volante, 2007, p. 10). While the EQAO in Ontario assesses reading, writing, and literacy, it does not have the capacity to assess "performance-based skills such as speaking clearly, designing a class project, or working effectively in a group" (Volante, 2007, p. 10).

A problem with standardization also lies with the fact that "even when not directly teaching to the test, teachers change their approach" (Harlen, 2006, p. 76). According to Johnston and McClune (as cited in Harlen, 2006, p. 76), tests caused teachers to alter their teaching style to suit what they thought was necessary. Specifically, their teaching practice changed as they focused more on direct instruction at the expense

of opportunities whereby students learned through enquiry and problem solving. In this regard, high stakes testing creates a "classroom culture which favours transmission teaching and undervalues variety in ways of learning" (Harlen, 2006, p. 76). Evidence suggests that a classroom culture dominated by high-stakes testing impacts teachers' feedback as it becomes largely judgmental, as opposed to formative in nature. In other words, high-stakes testing works to establish "conditions in which summative judgments permeate all teachers' assessment strategies" (Harlen, 2006, p. 76).

Ultimately, an atmosphere of high-stakes testing reinforces the discredited approach to teaching and learning that is grounded in "Taxonomy for Learning"—"first *knowledge*, then *comprehension*, then *application*, then *analysis*, then *synthesis*, and finally *evaluation*" (Trilling & Fadel, 2009, pp. 50-51). The implications of this "lock-stop, one-before-the other learning sequence" (Trilling & Fadel, 2009, p. 50) are manifold. An instructional approach that favours a direct transmission of knowledge impedes learning and the sense of being able to learn for those students who learn in a more active manner. Moreover, the judgmental nature of evaluation has the effect of focusing students' attention on performance rather than learning, diminishing interest in the work, and lessening the motivation of lower achieving students (Harlen, 2006, pp.76-77). As already mentioned, an instructional approach based on a memorization of facts and summative tests also fails to nurture creativity and innovation in students. In this respect, such mode of instruction runs counter to research that proves how students learn most effectively, as well as the revised version of the taxonomy that utilizes the updated terms *remember*, *understand*, *apply*, *analyze*, *evaluate*, and *created* (Trilling & Fadel, 2009). Anderson and Krathwohl underline that "these processes can be learned at the

same time or even in reverse order" (as cited in Trilling & Fadel, 2009, p. 51). Moreover, research has found that synthesizing many of these learning skills enhances learning outcomes. Thus, the implications of large-scale assessment on student learning are antithetical to the development of skills that are required by students in the 21st century.

Counter to high-stakes testing, there has arisen an increased focus on classroom-based assessment. This interest in classroom-based assessment has entailed a move from the traditional practice of learning and testing and the mere acquisition of basic skills. Earl and Katz's (2006) *Rethinking Classroom Assessment*, published by Manitoba Education, Citizenship, and Youth, and the OME's (2010) *Growing Success* document provide a clear understanding of the shift to assessment *for* evaluation (Drake, 2010; Volante & Beckett, 2011). Both documents view A*f*L as encompassing assessment for learning (diagnostic and formative assessment), assessment as learning (peer and self-assessment), and assessment of learning—a value assigned to work (Drake, 2010; Earl & Katz, 2006; OME, 2010). Black and William (2006a) underline that feedback—an essential component of A*f*L—can improve student learning if it requires students to act upon comments as part of the learning process. Although A*f*L can improve student learning, the problem or question arises as to how formative assessment can be most effectively utilized to meet 21st century learning aims.

Assessment of student skills and knowledge constitutes a necessary component to guiding students and teachers on their level of success in attaining desired 21st century learning goals (Trilling & Fadel, 2009). Despite this necessity, Trilling and Fadel (2009) argue that recent assessment practices have strikingly left out "the measurement of 21st century skills and the deeper understandings and applied knowledge that can come from

rigorous learning projects" (p. 131). Though Trilling and Fadel refer to summative tests here, A*f*L can be enhanced through the measurement of 21st century skills and the development of challenging projects. Trilling and Fadel pose the following question:

> How do we move to a new balance of 21st century assessments that provide useful feedback of students' progress in understanding a learning topic or their gains in 21st century skills, as well as measuring much wider range of capacities and abilities that better reflect the whole learner? (p. 131)

This study seeks to answer the aforementioned question.

Purpose of the Study

This study aims to explore the impact of globalization on assessment, and how assessment needs to change in order to meet the educational demands of a globalized world. Specifically, the study will examine the impact of various global forces on the rise of international testing and large-scale assessments, such as provincial testing in the case of Canada. The existing paradigm of standardized testing will be examined from the perspective of its main challenges and critiques. The study will also explore the counter-trend to large-scale assessment in the form of assessment *for* learning; its proposed advantages to student learning will be discussed in juxtaposition to the implications of large-scale assessment. Furthermore, this report will examine innovative ways that assessment *for* evaluation can be implemented in the classroom and utilized for the development of the following 21st century learning skills: critical thinking, problem solving, collaboration and communication, social cultural understanding, and motivation. This study will suggest ways in which instruction, learning, and assessment can be aligned to improve student learning and foster 21st century skills. The possibility of

integration of both large-scale assessment and assessment *for* learning in school systems will also be explored. Ultimately, the study will seek to determine the direction or future of assessment in the context of a changing global economy or globalized world.

Research Questions

The following questions will be used in order to guide the examination of the above issues: What is the impact of globalization on assessment? How has globalization led to the rise of international testing and provincial testing in the case of Canada? How does standardized testing impact teaching and learning? Does international testing and local standardized testing achieve its aims in the context of accountability and globalization? How does assessment have to change in order to meet the demands of global economic change and a 21st century knowledge economy? Does the shift to assessment *for* evaluation present an approach by which teachers can improve student learning and meet 21st century learning goals? If yes, how can teaching, learning, and assessment be aligned to foster 21st century skills of problem solving, critical thinking, collaboration, social cultural understanding, and motivation? What are some suggested approaches or ideas to align teaching, learning, and assessment? Can assessment *for* evaluation co-exist alongside large-scale summative or standardized assessments in our school systems? Lastly, what is the future of assessment in the context of a changing economy or globalized world?

Theoretical or Conceptual Framework

This paper will use the *Story Model* as a framework to understand change with respect to assessment in a period of globalization or global economic change. Drake (2010) writes that the *Story Model* "adopts the perspective of narrative researchers such

as Connelly and Clandinin (1994) in that it focuses in four directions—backwards-forwards and inside-outside" (p. 2). Under this model, stories are understood by means of personal, cultural, global, and universal frames that embody inside-outside and outside-inside perspectives. One's mode of understanding is often arrived at from a personal story or personal interpretation of a situation, which is then shaped by a cultural story or the culture of one's institution, province, and/or country depending on the context. The cultural story always rests on a global story as the culture of one locale is often influenced by that of other jurisdictions or other cultures of the world. The individual is largely unaware of how the assumptions or meta-narratives of the cultural story pervade his or her personal story. With respect to the outside frame, it represents the universal or timeless story that binds all humans—how students learn most effectively in the case of education.

Drake (2010) writes that we need to take a coinciding, backward-to-forward, and forward-to-backward examination in order to comprehend the phenomenon of any "story." For Drake (2010), the

> exploration of temporality includes the present story (today), the perceived past story (Old Story), and the anticipated future (New Story). The story model rests on the presupposition that the present story is experiencing a flux or change—or possibly even a crisis. Under this assumption, two antithetical or diametrically opposed sets of beliefs, values, and behaviours compete for dominance. The *Story Model* posits that "there is an ongoing dialectical process by which players attempt to synthesize or reconcile these two opposite polarities. (p. 4)

One thus needs to consider shifting to both/and as opposed to asserting one or the other

when anticipating the future. In the words of Drake (2010),

> it is important that the good from the Old Story be recognized and carried forward. On the other hand, we need to recognize what is realistic in the preferred future story so that we can bring that forward also. Through this dialectical process, the next story is created. (p. 4)

My paper will explore the present story with respect to assessment, the perceived past story, and the anticipated new story. Using the *Story Model*, my paper will anticipate the future story of assessment through a means that reconciles elements of the present story with those of the past story.

Importance of Study

Ontario educators are often confronted with the professional obligation of determining the most effective assessment and instructional strategies to best prepare students for a globalized world. A conundrum arises from the fact that Ontario teachers encounter two supposedly antithetical forms of assessment: large-scale high-stakes assessment administered by the EQAO, and A*f*L as outlined by the OME's (2010) *Growing Success* document. My study attempts to fill the gaps with respect to the possibility of an assessment model that integrates aspects of large-scale testing and assessment *for* learning. This study is important because an insight into assessment for 21st century skills and the future direction of assessment will enable educators to become better assessors.

Scope and Limitations of the Study

All of the academic literature reviewed for this paper was written in the English language. As a result, the research literature mainly applies to English-speaking countries

and educational systems within the English-speaking world.

Methodology

This paper will use the conceptual framework of the *Story Model* in order to examine the present story of instruction, assessment, and learning, the perceived past story, and the anticipated future story. This project will present a conceptual analysis of the literature on assessment. Research literature will be utilized to determine the impact of globalization on assessment, and how assessment needs to change in order to meet the demands of globalization or a 21st century knowledge economy. Concepts such as accountability, assessment, and 21st century skills will be explored through the relevant literature.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

There are a number of explanations which account for the rapid growth of international assessment; they include the formation of a world educational culture, as well as perspectives that underline global competition and macro-dissatisfaction theory.

Kamen and McNeely (2010) outline that global forces have led to the dramatic expansion of international testing and national assessment. Specifically, Kamen and McNeely argue that "the international acceptance of testing comes from the key ideological forces in the world polity that are associated with the accelerating globalization of national and international cultural, economic, and political structures" (p. 5). They explain the rapid expansion of international and national testing as arising from the cultural perspective of education as part of the world polity that has developed since 1945: "world educational ideology, the hegemony of science as a mode of understanding, and the idea that societies, like organizations, can be successfully 'managed' to achieve important educational goals" (p. 9).

The world educational ideology rests on the premise that education serves both an individual and collective good as the economic competiveness of a nation relies on the mass education of the populace. This perspective holds that individuals need to be prepared for responsibilities and opportunities in local, national, and international spheres. In the context of globalization, policy makers no longer view the role of education as preparing workers to meet a stable economic system and occupational structure. Instead, they concentrate on anticipating skill sets that will produce intellectually flexible workers who can adapt to the future skill demands of a globalized economy; for policy makers, such workers are imperative for economic success. In

addition, Kamen and McNeely argue that the international desire to test and assess is reflective of the hegemony of science which reinforces "the sense of a rationalized world view in which everyone is subject to the same kinds of causal laws and understandings under which virtually all arenas are subject to scientific analysis" (p. 11). With respect to education, the international testing movement is grounded in the premise that one can find methods to raise student achievement and that these techniques are legitimate, regardless of the education system. In adhering to such beliefs in science, policy makers are confident that advancement toward national educational aims can be measured and that scientific understanding can inform policy.

Lastly, Kamen and McNeely (2010) attribute the rise of testing to the viewpoint that societies can be "managed" like organizations; this managerial approach involves a model whereby responsibility devolves downward to organizational participants. In the case of educators, this entails a devolution of responsibility from "international professional groups and other NGOs to national groups and local school systems and, ultimately to individuals" (p. 13). Managerial models of organization reinforce the assumption that there are standard solutions to problems which are applied to all contexts, with minor changes; hence testing becomes the means by which the effectiveness and capacity of school systems are measured locally, nationally, and globally (Kamen & McNeely, 2010, p. 14).

Jennifer DeBoer (2010) also examines the considerable growth in the number, participants, and frequency of international assessments of student academic achievement over the last 50 years. She explains the growth of international assessment through the use of the following three theoretical frames of understanding: "(1) why has this situation

arisen now? (2) why have assessments taken on the forms that they have? and (3) why have the countries that are participating chosen to do so?" (p. 298). DeBoer provides an analysis of the progression of international testing from an initial group that tested 12- and 13-year-olds to its present form as the International Association of Educational Achievement. She indicates that the phenomenon of international comparative assessments can be seen with the increase of tested subjects, which include math, reading, literacy, science, civic education, and technology. Though DeBoer indicates that the design of such test may impact policy makers' decision to participate, she outlines a number of other factors which may explain a country's involvement with international comparative assessments.

For instance, national ideologies with respect to assessment and testing may impact a government's position toward international testing; countries with national testing schemes would be more favourably inclined to participate in international assessments. The factor of reputation may also play a significant role in a government's decision to participate. A high-scoring country may not wish to participate in assessment where there is a huge achievement spread as it may view it as harmful to its image, or of no use to improving its reputation. Counter to this position, a high-scoring country may wish to participate in order to vaunt its results as the citation of test results is an easy way to "illustrate human capital prowess" (DeBoer, 2010, p. 307). From another perspective, a country's association with TIMMS by participating in the assessment may counterweight any harm to reputation as a result of performance.

Finally, DeBeor (2010) argues that the growth of international testing may be attributed to macro-dissatisfaction which has arisen due to globalization:

> Globalization brings disparate parts of the world together, thereby facilitating increased awareness of perceived inequity, discovery of unfulfilled expectations, and heightened sensitivity to previously ignored issues, all of which are possible contributors to macro-dissatisfaction. Globalization also provides an outlet through which localized dissatisfaction can be broadcast quickly and create a snowball effect until macro-dissatisfaction decidedly exists. Further, globalization creates interdependence between different nation-states that can lead to dissatisfaction if a country does not feel that it is benefitting enough. The factor of globalization may have numerous consequences for policy spread. (p. 321)

According to DeBeor, macro-dissatisfaction theory explains the increased international use of accountability systems in education. The global climate which is characterized by the need for increased standards and accountability may be the result of general dissatisfaction with educational results that parallel the rise of participation in international assessments.

In the Ontario context, the rise of accountability systems in education may be seen with the formation of the EQAO. The establishment of the EQAO and its large-scale testing demonstrates the impact of international assessment on educational policy at the level of provincial jurisdiction. Volante (2007) explores the genesis, limitations, and impact on teaching of the EQAO in Ontario. In discussing the genesis of the EQAO, Volante points to the fact that its tested domains closely resemble those of large-scale assessments in other Canadian provinces and territories, and that its focus on literacy and numeracy corresponds to national and international assessment programs such as the Pan Canadian Assessment Program (PCAP), Trends in International Mathematics and Science

(TIMMS), Progress in International Literacy Study (PIRLS), and Program for International Student Achievement (PISA). In this regard, Volante places the birth of EQAO in the context of local and global assessment trends.

Volante (2007) provides a thorough overview of the impact of large-scale assessment on teachers, students, and school systems according to the research. He outlines that while testing may contribute to the need to succeed for some students, it may lead to apathy and lack of performance on the part of students who feel that they will be unsuccessful. The research shows that the possibility of dropping out and educational failure is higher when external testing is high-stakes and closely tied to graduation. Furthermore, Volante outlines research which deals with the impact of external testing on instruction. The influence of external testing on teaching includes an emphasis on tested subjects (language arts, math, and science) over nontested ones (i.e., music, visual arts, and physical education), as well as other aspects of the curriculum (reading and writing at the expense of listening and speaking skills); in this respect, students are deprived of an education that develops a wide range of skills. Moreover, Volante highlights that the emphasis on test scores creates unhealthy competition between teachers and schools that often obstructs professional collaboration such as the sharing of resources and best practices.

According to Volante (2007), "perhaps the best insidious challenge facing Ontario's large scale assessment programs is that their results are reported in a manner that far outstretches their abilities" (pp.9-10) as all areas of student learning cannot be assessed through summative tests. Having been written before the publication of the OME's (2010) Ontario's *Growing Success* document, Volante argues that "the current

basis for judging educational quality and accountability in Ontario is flawed precisely because the province has adopted a myopic view that overemphasizes provincial test scores" (p. 16); as opposed to mirroring other nations, Ontario and Canada need to adopt a comprehensive approach that "values teacher's day-to-day classroom work by incorporating curriculum embedded assessment into our decisions for acceptable student achievement" (p. 16). According to Volante, this type of approach provides policy workers with a more robust analysis of student achievement that is able to consider various performance-based skills essential for future success" (p. 16).

In light of the limitations of standardized testing, a counter-approach to assessment known as A*f*L has arisen. A*f*L is regarded as a mode of assessment that enhances student learning where, one could argue, large-scale assessment fails.

Clark (2008) supports A*f*L by using both theoretical arguments and the results of a large-scale A*f*L program which was implemented by the British government in Scottish schools. Clark outlines the ineffectiveness of the "black box" approach to learning identified by Black and William whereby "certain inputs from the outside – pupils, teachers, other resources, management rules and requirements, parental anxieties, tests and so on are fed into the box" (as cited in Clark, 2008, p. 2). As opposed to this receptive system of learning, Clark argues for a "constructivist" approach to improving student learning and motivation in the long term; his position rests upon an overview of literature and the outcomes of the AAG (2002-2004) and APMG (2004-2008) programs in the U.K.

Clark (2008) highlights that A*f*L has the effect of creating a culture of cooperation in the classroom. According to Clark, the research undertaken by the AAG and APMG

found “that conditions for successful cooperation exist in the classrooms as evidenced by the positive responses of students to the idea of co-operating with different people in their assessment” (p. 5). For Clark, the framework of A*f*L encompasses cooperation among all participants as it is grounded in dialogue and interaction that embraces self- and peer assessment. A*f*L also allows for in-depth communication with teachers that is valued by students. Clark argues in favour of A*f*L by emphasizing the importance of “communication in the classroom” (p. 4) as a key component for learning. He contrasts A*f*L with the black box approach by outlining that it is based upon five main principles of assessment in action, all of which place an emphasis on communicative interaction:

> (a) students must be able to understand clearly what they are trying to learn, and what is expected of them; (b) be given feedback about the quality of the work and what they can do to make it better; (c) be given advice about how to go about making improvements, and (e) be aware of who can give them help if they need it. (p. 6)

This approach fosters the notion of “student-centred learning” by relocating students to the heart of teaching and learning.

In arguing for A*f*L, Clark (2008) underlines that traditional assessments are at odds with the need for students “to think analytically; to understand and communicate at the detailed and overview levels, and to acquire life-long skills that permit continuous adaptation to their environment” (p. 10). According to Clark, learning can only be improved by repositioning students at the centre of a three-cornered model that includes (a) curriculum, (b) teaching and learning (instruction), and (c) assessment, and by connecting them to each corner.

Similar to Clark, Black and William (2006a) explore the research on formative assessment and the results of developmental work with teachers—the King's-Medway-Oxfordshire Formative Assessment Project (KMOFAP). Black and William (2006a) point to research showing that where formative assessment was weak, teachers' questions and tests fostered rote and superficial learning instead of deep understanding. According to the research, a negative implication of teaching practices with weak formative assessment includes an emphasis on competition and comparison of students, as opposed to personal improvement. Teacher feedback, in such cases, plays more of a managerial and social role which is at odds with a learning one.

In implementing their study, Black and William (2006a) defined and developed practices under four headings: "oral feedback in *classroom questioning* (more recently developed as *dialogue*), *feedback through marking*, *peer and self-assessment*, and the formative use of summative tests" (p. 14). The outcomes from the study found that teachers in KMOFAP classrooms paid closer attention to student responses. They also began to take a more constructivist view of learning whereby students were not passive recipients of knowledge but instead were actively engaged in their learning. Correspondingly, the students also changed through formative assessment as they arrived at an understanding of what constitutes good work by using criteria in the process of peer and self-assessment, and they acquired a meta-cognitive approach to their learning.

Upon reflection, individual students and teachers recognized a transformation of classroom culture. Teachers recognized a transformation of their role "from a presenter of content to a leader of an exploration and development of ideas in which all students were involved" (p. 17). Meanwhile, students realized that they had to change from "behaving

as passive recipients of knowledge offered to being active learners who can take responsibility for their own learning" (p. 18). Ultimately, the evaluation of the project reported the following effects of formative assessment on student learning: a significant increase in student engagement; higher motivation and confidence, as well as a more positive attitude to learning; improved behaviour and enhanced cooperation in class in teamwork and learning; and significant improvements in student learning.

A*f*L thus represents a constructivist and student-centred approach to learning. Another constructivist approach to learning, known as the 21st Century Skills movement, has recently emerged which incorporates A*f*L and seeks to enhance student learning.

Trilling and Fadel (2009) argue for a 21st century learning approach, which is more student-centred and will enable students to survive and succeed in a more globalized world. Tilling and Fadel posit that schools have remained relatively unchanged despite the changes that have been brought about by globalization, and that they need to be transformed in order meet the demands of a 21st century knowledge economy. Their book provides an introduction to 21st century learning which encompasses the following three sets of skills: learning and motivation skills; information, media, and technology skills; and life and career skills. Learning and motivation skills include such skills as learning to learn and innovate, critical thinking and problem solving, communication and collaboration, and creativity and innovation. Career and life skills entail those that enable students to be prepared for work and life: flexibility and adaptability; initiative and self-direction; social and cross-cultural interaction; productivity and accountability; and leadership and responsibility.

Trilling and Fadel (2009) argue for a 21st century approach to learning that moves

away from a strictly teacher-centred practice to one that is balanced with a learner-centred practice. This shift in instruction requires teachers to balance "their time between being 'sage on the stage,' who presents, explains, and answers questions and the 'guide on the side' who supports students' research, discovery, and sharing of their own findings in learning projects" (p. 39). According to Trilling and Fadel, 21st century skills can be fostered in students through learning that is inquiry based and requires solutions to problems. They suggest that project learning, problem-based learning, and design-based learning can instill students with the creativity, innovation, and collaboration skills that are required for the 21st century. With respect to assessment, Trilling and Fadel underline that the focus needs to move away from after-instruction tests or summative assessment in favour of formative assessments and evaluations that are embedded in ongoing learning activities. They write that better summative and formative evaluations are needed to "measure content knowledge, basic and higher order thinking skills, comprehension and applied 21st century skill performance" (p. 132). In essence, Trilling and Fadel (2009) argue for an approach to learning and instruction that does not require understanding, application, analysis, evaluation, and creation to occur in any particular order, but rather together in well-formulated learning activities and projects.

Similarly, Susan Drake (2012) proposes a 21st century approach to curriculum and assessment that is remarkably different from traditional practices. Drake (2012) examines how to develop curriculum that meets the needs of both accountability and relevance through the creation of a standards-based interdisciplinary curriculum within a 21st century context. Her work proposes a solution to the conflict between the notion of accountability which strives to determine whether teachers are teaching and students are learning, and

relevance which requires students to meet their full potential and acquire 21st century skills that are necessary at this point in history. Drake (2012) argues that a balance between accountability and relevance can be found in North America through the adoption of Common Core State Standards; this balance between accountability and relevance can be attained by the alignment of curriculum whereby "the standards, content, assessment, and instructional strategies are coherent and make a complimentary fit" (p. 30).

Drake (2012) proposes a designing down or backward design approach which utilizes the Know/Do/Be (KDB) Umbrella. This framework involves teachers looking at the big picture by considering what students should *Know*, *Do*, and *Be* throughout all subjects which are placed under an umbrella. The Know entails an understanding of universal concepts (Big Ideas) and essential understanding (Enduring Understandings), and is not separate from the Do. The Do encompasses the skills that require students to progress up the hierarchy of knowledge. A complex set of interdisciplinary skills which may be looked at by a teacher include 21st century skills such as "communication, problem solving, inquiry, design and construction, research and information management, prediction, critical thinking, and presentation skills" (Drake, 2012, p. 95). The Do is closely tied to the Be as one cannot do something without a value system; this Be may encompass the need for students to be global citizens. Within a 21st century context, a number of 21st century skills may constitute the Be; they include those which fall under the category of Career and Life Skills such as flexibility and adaptability, initiative and self-direction, social and cross cultural skills, productivity and accountability, and leadership and responsibility.

Overall, Drake (2012) proposes that an integration of curriculum, instruction, and

assessment can meet standards and enhance student learning. Teachers need to connect the mandated curriculum with the Know, Be, and Do and with assessment *of*, *for*, and *as* learning at the design level of curriculum. Drake (2012) suggests an alignment of instruction and assessment through project-based learning, problem-based learning (PBL), and challenged-based learning (CBL) which requires students to find a solution to real life problems or challenges.

Summary

The above pieces of literature examine either international testing or standardized testing, assessment *for* learning, and/or the teaching of 21st century skills. Kamen and McNeely (2010) present a number of global forces that have led to the dramatic growth of international and local testing, which include a world educational ideology, the hegemony of science, and the idea that societies can be managed. DeBoer (2010) presents macro-dissatisfaction theory as an explanation for the rise of international testing and increased use of accountability systems in education. Volante (2007) explores the genesis, limitations, and impact on teaching of the EQAO in Ontario. Clark (2008) outlines the advantages of A*f*L on student learning, namely, the creation of a culture of cooperation in the classroom. Similarly, Black and William (2006a) explore research on formative assessment and the results of developmental work with teachers, which underline the benefits of a constructivist approach on student learning. Trilling and Fadel (2009) argue for a 21st century, student-centred approach to learning that will enable students to be successful in the new knowledge economy. Lastly, Drake (2012) offers an approach to curriculum that meets both accountability and relevance through a practice of backward design.

CHAPTER THREE: THE OLD STORY OF LARGE- SCALE ASSESSMENT

There has been a dramatic expansion in the participation of countries in international testing or studies over the last 50 years. The following section discusses the history and development of international assessment.

The Global Story of Large-Scale International Assessment

The explosive growth in international testing can be seen in the fact that more than 70 countries participated in either Trends for International Mathematics and Science Study (TIMMS) or Programme for International Student Assessment (PISA) in 2003—the highest number for any year in the five decades since this date. Prior to 2007, a total of 77 countries had taken part in at least one TIMMS assessment. Not only are more countries participating in international assessments than ever, but the media and academic coverage which their results garner also has increased, along with the public acceptance of such assessments (DeBoer, 2010).

One could argue that the growth in the testing programs of international organizations constitutes a *global story* as it means that students worldwide prepare for similar tests or encounter a uniform educational or professional culture (Spring, 2009). The International Association for Evaluation of Educational Achievement (IEA) represents the most widely known and possibly the oldest-running international testing organization (Wiseman, 2010, p. xiv). The Organisation for Economic Co-operation and Development (OECD) represents a newer testing organization as it oversees international testing in secondary education. The IEA and OECD, respectively, supervise the administration of TIMMS and PISA and conduct an analysis of the results (Wiseman, 2010). Due to their high profile and wide recognition, the IEA and OECD, and their

respective achievement studies of TIMMS and PISA have "become synonymous with what some believe is right and some believe is wrong with both international achievement studies and education policy making" (Wiseman, 2010, p. xiv). Though the IEA oversees the administration of TIMMS studies, it also undertakes the international studies of Civic and Citizenship Education (ICCS), Technology in Education (Sites), and Reading Literacy (PIRLS) (DeBoer, 2010; Pineda, 2010).

Differences Between TIMMS and PISA

With respect to TIMMS, it is a worldwide exam that is administered to elementary school children in the subjects of math and science (Pineda, 2010). TIMMS differs from PISA as it is "more time-consuming and more in-depth" (DeBoer, 2010, p. 302). In contrast to PISA, TIMMS constitutes a curriculum-referenced test. Specifically, this international achievement study "takes stock of the curriculum in each respective country, the educational materials available there, the student, teacher, and school background factors, and student achievement" (DeBoer, 2010, p. 303). A country chooses to participate in TIMMS and must pay for its own study; however, funding assistance may be negotiated in certain instances (DeBoer, 2010).

PISA differs from TIMMS as it is given to students at the secondary school level (Wiseman, 2010). PISA provides a "snapshot" of the ranking of international testing. In contrast to TIMMS, PISA does not involve itself with the gathering of additional data as it is only a criterion-referenced achievement test. In the realm of participation, PISA is obligatory and confined to nations which are members of the OECD, and usually, more wealthy and industrialized. Because fewer nations are involved in PISA, funding for the test does not prove to be as significant of an issue as with TIMMS. PISA thus has the

promise of immense global influence because the participating members and partner nations account for 90% of the world economy according to the OECD (DeBoer, 2010).

Counter to TIMMS which takes stock of each nation's curriculum, PISA focuses on measuring the skills which are needed for a national economy, as opposed to the aims of the national curricula. In outlining the knowledge and skills assessed by PISA, the OECD's *PISA 2003 Assessment Framework* states:

> These are defined not primarily in terms of a common denominator of national school curricula but in terms of what skills are deemed to be essential for future life. [The national curricula] focus even less on more general competencies, developed across the curriculum, to solve problems and apply ideas and understanding to situations encountered in life. (As cited in Spring, 2009, p. 62)

In this regard, PISA moves the focus away from the national curricula to defining the educational standards of a global economy. Spring (2009) writes that "PISA is creating the global standards for the knowledge required to function in what the OECD defines as the everyday life of a global economy" (p. 62). PISA has thus incorporated open-ended problem-solving elements in its testing (DeBoer, 2010).

The assessments for PISA have occurred over a 3-year cycle which commenced in 2000 whereby a specific topic is designated for each year. An international assessment for reading was administered in 2009, whereas one for mathematics was undertaken in 2012; an assessment for science is planned for 2015 (Spring, 2009). The OECD champions PISA as a significant component of the global knowledge economy: "PISA seeks to measure how well young adults, at age 15 and therefore approaching the end of compulsory schooling, are prepared to meet the challenges of today's knowledge—what

PISA refers to as 'literacy'" (as cited in Spring, 2009, p. 63). PISA's definition of literacy entails "mathematical literacy," "problem solving," "reading literacy," and scientific literacy" (Spring, 2009).

Theoretical Explanations for the Spread of Large-Scale International Assessments

The spread of large-scale international assessment may be explained in the context of globalization. This section discusses the globalization of education.

The Globalization of Education

"Globalization" may be defined as an impending progress toward cultural homogeneity, as a collection of agents that are leading to the extinction of the nation state and the likely establishment of a world polity, and as representing the inexorable advance of information technology (Dale, 2000). Though the term globalization has been applied indiscriminately to describe a number of factors, there has been an effort to arrive at a theoretical understanding of "the nature of the changing composition and consequences of supranational forces" (Dale, 2000, p. 427). Dale (2000) writes that the recognition of globalization's impact on national educational practices entails the following three considerations:

> appreciating and specifying the nature and force of the extranational effect; specifying what it is that may be affected, in this case "education," and what forms those changes may take; and how that effect occurs, whether directly or consequentially on other changes it may bring about within or on the educational sector. (p. 427)

In this respect, one may view the spread of international testing or assessments, and its direct impact on education as the outcome of globalization.

Spring (2009) presents a perspective of the globalization of education which does not regard it as events of a "global scale that affect national school systems" (p. 1) or the result of "global educational policies and practices existing in a superstructure above national and local schools" (p. 1). Rather, Spring views the relationship between globalization and education as a continuous dynamic of interaction whereby "global ideas about school practices interact with local school systems while, through mutual interaction, both the local and global are changed" (p. 1). In this regard, the participation of countries in international achievement studies and the spread of international assessments cannot simply be viewed as the result of events, practices, or policies that exist above or are imposed upon the national or local schooling.

The CWEC Approach

The impact of globalization on education may be explained through the well-established theory devised by John Meyer which Dale (2000) denotes as the "Common World Educational Culture" (CWEC) approach. The adherents of this position argue that "the development of national education systems and curriculum categories is to be explained by *universal* models of education, state, and society, rather than by distinctive *national* factors" (Dale, 2000, p. 428). The CWEC approach aims to illustrate and present evidence for the existence of a hypothesized world culture—of which education constitutes an integral component (Dale, 2000). Though "World" suggests an extranational focus, it specifically refers to an international society or polity comprised of individual autonomous nation-states, or in essence, an international community. The word "Culture" denotes one that is shared or equally available, as opposed to one that is shared or imposed by globalization (Dale, 2000). The CWEC approach to examining

education in the context of globalization has been strengthened by a group of scholars who may be called "world institutionalists." According to Dale, the

> central argument of the world institutionalists is that institutions of the nation-state, indeed the state itself, are to be regarded as essentially shaped at the supranational level by dominant world (or Western) ideology, rather than as autonomous and unique national creations. (p. 429)

In this respect, the activity and policies of states are framed by universal norms and values. The values which comprise this universal culture encompass those of Western modernity. These values of modernity place progress and justice at the epicentre, and are connected to the formation of ideas of the state and the individual (Dale, 2000).

The spread of international and national assessment may thus be regarded as the outcome of a common world educational culture. Kamen and McNeely (2010) argue that the rapid expansion of international testing and national assessments can be explained by the development of a world culture since 1945, which influences viewpoints on education as a facet of world culture. According to Kamen and McNeely, the perspectives which make up this world educational culture include the following: "world educational ideology, the hegemony of science as a mode of understanding, and the idea that schools, like organizations can be successfully "managed" to achieve important goals" (p. 9). These perspectives constitute global ideological forces that are greatly interwoven and are key cultural facets in the world system or polity. In spite of regional differences, nation states are more disposed to adopt associated ideologies and to display many of the characteristics of the global culture the more they become closely aligned to the world system (Kamen & McNeely, 2010).

The first perspective of the world culture of education entails a world educational ideology that views brain power as the most competitive advantage of a nation. In this context, countries cannot depend upon resources for wealth, but rather a highly competitive workforce that has the capacity to invent and innovate. This view implies that globalization has brought about the introduction of momentous changes to the world cultural sphere. Specifically, the ideological connection between countries and individuals has increased with the understanding of not only national but also world-level effects and dynamics. The rhetoric of this perspective underlines getting individuals ready for opportunities and responsibilities in the local, national, and international spheres. To a degree, education is tied to the economy or economic development, and the production of *homo economus* or new economic man (Kamens & McNeely, 2010).

This ideological view, which ties education to economic development, has also been espoused by the World Bank. In *Constructing Knowledge Societies*, the World Bank proclaims, "The ability of a society to produce, select, adapt, commercialize, and use knowledge is critical for sustained economic growth and improved living standards" (as cited in Spring, 2009, p. 37). The World Bank also posits that "knowledge has become the most important factor in economic development" (as cited in Spring, 2009, p. 37). UNESCO's 2001 International Conference also addresses the importance of education to economics, among other areas, with the statement: "In our account of mass education … education is not an end in itself … but it is a means for human beings to cope with change and to act as responsible citizens to develop wealth, democracy, and equity" (as cited in Kamens & McNeely, 2010, p. 11). A universal consensus with respect to the

above aims of education validates international endeavours to make education more accountable. Under such an environment, international testing and assessment gain a considerable degree of validity (Kamens & McNeely, 2010).

The hegemony of science constitutes the second element of a world educational culture that explains the dramatic spread of international testing and national assessments. Kamens and McNeely (2010) argue that the "international urge to assess and test also reflects the hegemony of science" (p. 11). The hegemony of science advances the perspective of a rationalized global word in which every sphere of human undertaking is governed by causal laws and prone to scientific analysis. With respect to international testing, the movement lies on the premise that one can uncover ways to raise individual student achievement in various subjects and that these methods are credible, irrespective of the education system. In their adherence to a belief in science, educators and policy makers hold an assurance that "progress toward national educational goals can be measured and that scientific understanding can inform policy making and practices" (Kamens & McNeely, 2010, p 12). A paradigm has emerged whereby beliefs and strategies and "best practices" with regard to international testing have been formalized into a "science of development policy." In the context of a "science of development" paradigm, it is accepted that certain human resource techniques which involved scientific and technical education accounted for the success of Taiwan and Singapore on international tests in the 1970s and 1980s. The belief in a "science of development" policy has led to a growth in calls for the testing and assessment of national education systems (Kamens & McNeely, 2010).

Another aspect of the world educational culture that has contributed to the rapid

spread of international testing on a global scale involves the notion of a managerial society. The notion of a managerial society posits that societies parallel organizations in the sense that they can be arranged; specifically, modern management models can be applied to societies whereby substantial responsibility is devolved to organizational participants. In education, notions of managerial reform concentrate on school organizations, pedagogy, and subject matter; they rest on the presumption that "schools and classrooms can be structured and better managed to achieve educational outcomes and reduce gaps in test scores among groups within and across countries" (Kamens & McNeely, 2010, p. 14). Management models of organization bolster the assumption that there exist standard solutions to educational problems, which are pertinent to all situations with only minor alterations.

Under this view, testing and assessment makes possible the measurement of a school system's ability to attain specific targets; if the school system fails, there is an applicable standard remedy to achieve better results. In the context of this perspective, international testing or national assessment has become a part of the world educational culture or "the norm." The expansion of international testing has had the effect of framing national or local school systems; to a degree, educational systems have been impacted by this fixation around the world to test and assess. In the global economy, all countries have a desire to compete and seek an advantage which will make it more competitive (Kamens & McNeely, 2010). According to Kamens and McNeely (2010), "the drive to assess and test is built into modern education, and both assessment and testing are likely to increase as more countries become more fully integrated into the world polity" (p. 22).

The GSAE Approach

Contrary to the "Common World Educational Culture" theory, the impact of globalization on education may be explained through an approach devised by Dale (2000), which he terms the "Globally Structured Agenda for Education" (GSAE). This approach relies on the recent work of international political economy that views the changing nature of the world capitalist economy as the agency of globalization and strives to determine its impact on education systems. The difference between the CWEC and GSAE approach can be understood by the meaning of terms or labels themselves. In the CWEC approach, "education" presents evidence for a hypothesized world culture; it is thus a resource, not a topic. The GSAE approach regards education as a topic in that it strives to "provide answers to questions about what goes on in the area known as education" (Dale, 2000, p. 428). Though both "World" and "Global" suggest an extranational focus, they defer in their meaning in that the former denotes an international society or polity comprised of individual sovereign nation-states; this view presupposes that there exists an international community. According to this perspective, the nation-state frames education as infixed in a world society. In contrast to "World," "Global" suggests social and economic forces proceed both transnationally and supranationally, as opposed to internationally, to circumvent, dismantle, or supersede national borders while simultaneously refashioning the relationship between nation-states. Dale (2000) explains that " "Structured Agenda" is contrasted with "Culture"; the latter implies a shared, and equally available, set of resources at a high level of generality, the former, a systematic set of unavoidable issues for nation-states that is framed by their relationship to globalization" (p. 428).

The two approaches fundamentally differ in their assumption about the relationship of globalization to education. Whereas the CSWEC approach to globalization entails the existence of a supranational set of ideas, norms, and values that influence national responses to areas of education, GSAE constitutes a paradigm shift as it regards the extraordinary degree of globalization as having altered the role of the nation-state both nationally and internationally. The direct and indirect effect of globalization on the state has modified education systems and policies by way of instruments that can be delineated. A significant component of this transformation has entailed the abdication of the powers by autonomous states to supranational organizations; in turn, these bodies become important players in the shaping of states' educational agendas. In the current global economic system, states have freely relinquished important facets of their power to international bodies in wake of economic problems which they have played no role in producing and have no autonomous power to deal with. In this regard, states are no longer autonomous members of a world polity.

While supranational organizations may be viewed as carriers of a world educational culture, one could counter argue that their role in education entails the involuntary imposition of practices by states (Dale, 2000). Dale (2000) argues that if one considers some of the well-known strategies and practices of powerful states and international organizations, it becomes quite evident that adherence may be attained by pressure or compulsion. In some respects, the pressure that is applied may be both mild and indirect; if countries wish to be viewed as real states or require international aid to attain such status, they need to adopt specific practices. In the case of supranational bodies such as the World Bank and International Monetary Fund (IMF), countries are

required to adopt certain policies or make certain structural adjustments to receive necessary funding (Dale, 2000). Argentina constitutes such an example as the IMF and IADB (Inter-American Development Bank) provide it with financial support to institute and maintain their widespread international assessment (Pineda, 2010). Furthermore, the OECD, which administers PISA, requires all of its members to participate in this international assessment. It may be concluded that state membership in supranational organizations has contributed to the spread of international testing (DeBoer, 2010)

Influence of International Assessments on National or Local School Systems

International assessments such as PISA and TIMMS establish global standards that are employed to compare the achievement of national school systems. In an effort to please national leaders, school officials desire that their students will perform well on these tests when compared to other countries. The aims of policy makers to achieve high results in comparison to other nations has had the effect of making national curricula uniform as they strive to prepare students to do well on the tests (Spring, 2009). In fact, IEA has declared that its global testing programs have impacted the curriculum of participating nation-states. In the aftermath of the 1970 seminar on Curriculum Development and Evaluation which saw the participation of 23 nations, IEA officials asserted that "this seminar had a major influence on curriculum development in at least two-thirds of the countries that attended" (as cited in Spring, 2009, p. 93).

In the case of PISA, the fact that the OECD countries and partners that participate in the test comprise over 90% of the world economy may lead to the adjustment of national curricula. With respect to the OECD-administered PISA, it discards national curricula by concentrating on basic skills which test creators deem as necessary to

function in the global knowledge economy. The PISA focus on basic literacy encompasses "mathematical literacy," "problem solving," "reading literacy," and "scientific literacy" (p. 63). An international assessment such as PISA may affect local curricula as policy makers alter it in a manner that will enable students to perform well on these assessments. PISA's specific view of literacy could lead policy makers to emphasize certain subjects to the detriment of others in an effort to preserve or enhance the reputation of the nation's school system in international comparisons (Spring, 2009).

In many cases, the outcomes and comparative scores from these tests often lead national school leaders or policy makers to make judgments about the quality of the education system. As a result, policy makers often turn to altering their curricula as a means to prepare students to perform well on future assessments (Spring, 2009). The adjustments to curriculum usually encompass a greater focus on testing. Pineda (2010) writes that "those countries that score quite low on international tests might be viewed as not competitive enough, raising anxieties about international competition that results in stricter, more prescriptive and to-the-test national curricula" (p. 345). The expanded use of and significance assigned to tests, and thus accountability, may be closely tied to international competition and its resulting effects on policy and practice (Pineda, 2010).

DeBoer (2010) presents "macro-dissatisfaction theory" as an explanation for both the growth in international testing and increased testing at the national level. For DeBoer, macro-dissatisfaction theory can be applied to policy changes not only at the school board level, but to alterations in education policy at the level of the nation-state as well. According to DeBoer, "macro-dissatisfaction theory" states "that, given a particular political, social, economic, or cultural climate, enough collective dissatisfaction will be

created that a large change is made more viable in response to this unrest" (p. 313). An important facet of "macro-dissatisfaction theory" entails the notion of periodic re-evaluation. Macro-dissatisfaction may be caused by a number of reasons, including "perceived inequity, unrealized expectations, changing senses of entitlement, awareness of alternatives, and political or cultural shifts" (DeBoer, 2010, p. 313). Each of these factors can produce enough dissatisfaction as to hasten corrective action.

With respect to international assessment, dissatisfaction with the present circumstances can actually drive a country to participate in assessments with the desire that the publication of the country's situation will garner attention from aid agencies and invite investment (DeBoer, 2010). Within national education systems, the phenomenon of international testing may be viewed as a source of dissatisfaction. Like Pineda (2009), DeBoer (2010) writes that the rise of the international use of accountability systems in education may be attributed to participation in international tests themselves. According to DeBoer, the "global climate includes increasing standards and accountability systems in education that are perhaps an outcome of general dissatisfaction with education outcomes concurrent to the increase in international assessment participation" (p. 321). Macro-dissatisfaction provides an explanation for the United States' augmented sensitivity to international assessments and increased focus on standards and accountability measures (DeBoer, 2010).

In examining the educational history of the United States, one can see that events of "dissatisfaction" associated with international competition or comparison such as the launch of Sputnik, and the "Nation at Risk" and "Gathering Above the Storm" reports have paved the way for standardized testing and accountability (DeBoer, 2010; Pineda,

2010). The U.S. performance on recent international assessments such as the TIMMS in 1999 and PISA in 2000 showed alarmingly low results in comparison to other nations (DeBoer, 2010). This participation in international assessments has impacted domestic education policy-making. Specifically, the U.S. policy response to the outcomes of these international performances has been the implementation of testing and accountability measures over the last decade such as the No Child Left Behind Act of 2010 and the now Race to the Top Fund (DeBoer, 2010; Pineda, 2010). In fact, the U.S. Department of Education describes the Race to the Top Fund as "a national competition which will highlight and replicate effective education reform strategies" and which encompasses, in addition to other elements, the adoption of "international benchmarked standards and assessments that prepare students for success in college and the workplace" and the establishment of "data systems that measure student success" (as cited in Pineda, 2010, p. 333).

It is not only the United States that is currently undertaking such reforms as several nations are instituting policies or programs which underline testing and accountability. The effect of international achievement studies on national policy making can be seen in the fact that national standardized tests often make comparative reference to TIMMS, PISA, and PIRLS (Pineda, 2010). Pineda (2010) writes that "these institutions and their tests reinforce the paradigm of the knowledge-based economy, competition, accountability, and other global discourses that set national agendas for education worldwide" (p. 333). For example, Mexico has adopted the philosophy of international assessments in order to become a competitive country whereby its standardized tests correspond to the prevailing international testing/assessment models

(Pineda, 2010). ENLACE (*Evaluacion National de Logro Academico en Centros Escolares*/National Evaluation of Academic Achievement in Schools) has, since 2005, administered national assessments to students in grades 3 and 9. Similarly, Argentina represents another country that has implemented a system of standardization that has altered the entirety of its educational system. Through a national system of standardized evaluation that was initiated in 1993, Argentina tests students in grades 3, 6, 7, 9, and 12. The students are tested in the subject areas of language, mathematics, social sciences, and natural sciences (these later ones in grades 6 and 12). After the examination and analysis of test scores, teaching materials are specifically targeted to address any shortcomings that are illustrated by the test (Pineda, 2010).

In Ontario, the impact of international studies on the local school system can be seen in the province's administration of EQAO-created large scale assessment programs in literacy and mathematics. The EQAO's focus on the two main areas of literacy and numeracy parallels international assessment programs such as PISA, TIMMS, and PIRLS (Progress in International Reading Literacy). Interestingly, the EQAO is also tasked with the responsibility of administering Ontario's involvement in those international assessment programs (Volante, 2007).

The Cultural Story of Large-Scale Assessment

As shown above, standardized testing constitutes a prevailing aspect of education in eras of accountability (Drake, 2010). Accountability in education entails a relationship between the three main stakeholders, which are tax payers, elected officials, and teachers. The premise of accountability in education rests on the notion that tax payers wish to be aware of how the education system is performing and require evidence from government

and schools as to the return of their investment (Volante, 2007). This concept of accountability can be seen in the EQAO report titled "Public Attitudes Toward Provincial Testing—And the Survey Says" that explores the public's view of testing in Ontario:

> One of the primarily roles of the provincial testing program is to provide a window into the publicly funded school system, thereby supporting accountability for student achievement. Indeed, when asked whether they believe "EQAO's provincial testing program helps keep the education system accountable to parents and taxpayers," nearly two-thirds of all respondents (64%) agreed that it did. This confirms a finding from research EQAO undertook with parents in 2009, which demonstrates that 69% of parents believed the provincial testing program helps keep the system accountable. (Jackson, 2012, p. 2)

Like other parts of the Western world, large-scale assessments in Ontario and the rest of Canada measure system effectiveness, thereby making the education system accountable for student learning (Volante, 2007). Though accountability through standardized testing constitutes the *Old Story*, large-scale assessments are administered in one form or another in every Canadian province or territory (Drake, 2010). The approach to standardized testing of each province or territory, however, differs with respect to grades tested, sample size, test format, frequency of administration, and primary importance—in other words, the stakes involved for students (Volante, 2007). In certain Canadian provinces such as Alberta, Newfoundland, and Quebec, the large-scale test comprises from 30% to 50% of a grade 12 student's overall grade. In Ontario, high school students are required to pass a provincial literacy test in order to graduate.

Large-scale assessment in Ontario falls under the jurisdiction of the Education Quality and Accountability Office (EQAO) (Drake, 2010). The EQAO was established in 1995, and it has initiated large-scale assessment programs in areas of literacy and mathematics for students in grades 3, 6, 9, and 10. As mentioned above, the testing of these domains correlates with other large-scale testing programs in other jurisdictions of Canada and other parts of the Western world. The emphasis on the two main areas of literacy and numeracy parallels the focus of international programs such as TIMMS, PIRLS, and PISA.

The EQAO-administered tests to students in grades 3 and 6 are in reading, writing, and mathematics. High school students in grade 9 are tested in mathematics, whereas those in grade 10 write the Ontario Secondary School Literacy Test (OSSLT) which is a high-stakes test as it constitutes a graduation requirement (Volante, 2007). One can thus note that standardized testing represents a *cultural story*, in addition to a *global* one.

Concerns and/or Critiques of Large-Scale Assessments

Standardized tests may be viewed as having negative outcomes on teaching and learning, and hence on the quality of education (Meaghan & Casas, 2004). The concerns or critiques of standardized testing include, but are not limited to the ones outlined below.

The unintended consequence of "teaching to the test" has been a major critique of standardized testing (Volante, 2011). Because teachers are held accountable for effective test scores rather than effective teaching, the quality of instruction suffers as the administering of practice tests is promoted. Teachers often work toward actively "coaching" their students in passing tests, as opposed to allocating instructional time to

assist them in acquiring an understanding of what is being tested (Harlen, 2006). Specifically, standardized tests have the effect of redirecting a teacher's focus from advantageous activities for student learning to test preparation that begins weeks before; this test preparation involves a considerable amount of class time devoted to drills, practices, and test-related exercises (Meaghan & Casas, 2004). As a result, students are deprived from gaining a well-rounded education as scope and depth in learning are severely impaired (Harlen, 2006; Meaghan & Casas, 2004). For example, the acquisition of mathematics problem-solving skills is substituted with a focus on word usage, recognition of spelling, punctuation, and arithmetic practices (Meaghan & Casas, 2004).

A narrowing of the curriculum also represents another inadvertent outcome of standardized testing (Volante & Beckett, 2011). Standardized tests can narrow the curriculum as they are devised to evaluate responses that are task-oriented as opposed to skill-focused. Specifically, curriculum becomes constricted in focus as the content of the test is taught to the detriment of material that is not going to be tested (Meaghan & Casas, 2004). Meaghan and Casas (2004) write that "instead of approaching topics from a variety of perspectives, students are trained to interpret passages in isolation and to engage in restrictive writing formats" (p. 6). In the aim to increase test scores, the development of higher-order cognitive and problem-solving skills are forsaken (Meagan & Casas, 2004).

It has been found that teachers alter their instructional approach despite the fact that they may not even be directly teaching to the test (Harlen, 2006). Johnston and McClure (as cited in Harlen, 2006) outlined that teachers modified their teaching style to fit an approach that they viewed as necessary due to the tests. They allocated more time

toward direct instruction and less at presenting opportunities for students to learn by way of enquiry and problem solving (Harlen, 2006). This approach becomes common as teaching techniques that are effectual at increasing test scores conflict with instructional strategies that foster critical thinking, reasoning, and problem solving (Meaghan & Casas, 2004). Meaghan and Casas (2004) argue that the "tyranny of the single right answer does not engage students in tasks which require sustained reasoning or an explanation concerning their thinking process" (p. 37). Teaching strategies that raise test scores serve to develop narrow skills which are untransferable, rather than cognitive processes of analysis, comparison, inference, and evaluation (Meaghan & Casas, 2004). As a result, student learning is undermined, especially for those students who learn in a more active manner (Harlen, 2006).

A problem with standardized testing also lies with the fact that the "material tested is of limited relevance" (Meaghan & Casas, 2004, p. 37). There exists a regular incompatibility between the curriculum and test questions themselves; much of the test material is often not taught and only corresponds to a fairly small portion of the curriculum (Meaghan & Casas, 2004). Furthermore, a weakness of large-scale assessments entails their inability to assess all elements of student learning (Volante, 2007). According to Volante (2007), a challenge facing standardized testing, particularly Ontario's large-scale testing program derives from the premise that "their test results are typically reported in a manner that outstretches their abilities" (pp. 9-10). Volante (2007) writes that "not all aspects of student learning may be assessed through on-demand paper-and-pencil tests" (p. 10). It is generally agreed that the four following areas encompass literacy: reading, writing, speaking, and listening. Though EQAO assessments

may be perceived as adequately assessing reading and writing, they are not devised in such a manner as to evaluate aspects of listening and speaking. Overall, standardized tests do not possess the ability to "assess many performance-based skills such as speaking clearly, designing a class project or working effectively in a group" (Volante, 2007, p. 10). This restrictive scope of assessment has yet to influence public attitudes toward large-scale assessments. Nevertheless, the complex nature of cognition and learning necessitates the creation of alternative and more authentic modes of assessment (Volante, 2007).

Standardized tests are also shown to have a negative effect on the self-efficacy and motivation of students to learn. The research validates that feedback to students constitutes an important factor in determining their feeling of being capable of learning and of being successful at classroom activities which they embark on. This feedback may be derived from various sources, including the responses of teachers to their work and that of peers, and from performance on similar activities. According to the research, teachers' feedback, in an atmosphere dominated by high-stakes testing, tends to be mainly judgmental and seldom formative (Harlen, 2006). Butler's experimental study of various types of feedback found that judgmental feedback incites interest in performance, as opposed to learning (as cited in Harlen, 2006). Such feedback is especially harmful to lower achieving students. Without feedback from previous work and the chance to learn from past experiences, students' are hampered from further learning and acquiring a sense of being capable of learning. As a result, the judgmental nature of feedback has an aggregate effect on their self-efficacy (Harlen, 2006). Furthermore, the test anxiety often associated with standardized tests has the effect of harming self-concept, abating one's

motivation to learn. Standardized tests are thus not appropriate for all students because the stress that they exact differs from that of the everyday classroom (Meaghan & Casas, 2004).

Standardized tests may also be critiqued because their format and procedure are diametrically opposed to the collaborative nature by which students interact in the classroom (Meaghan & Casas, 2004). The format of standardized tests and their procedure drastically differs from everyday classroom practices of "responding to the familiarity of the teacher and glancing at other students" in an effort to "seek information through voice intonation, and body language" (Meaghan & Casas, 2004, p. 37).

Furthermore, the reliability and validity of standardized tests may be challenged due to the impact of factors such as socioeconomic status (SES), race, gender, et cetera on test results (Meagan & Casas, 2004). Kohn (2000) argues that non-instructional factors explain most of the variance among test scores when schools or school districts are examined. He writes that comparable U.S. studies of state tests have found that four variables (number of parents living at home, parent's educational background, type of community, and poverty rate) accounted for approximately 89% of the differences in state scores.

Canadian research studies have also yielded similar findings with respect to the impact of SES on provincial standardized test results. In their study of SES and standardized testing, Roos et al. (2006) found that "educational performance is repeatedly shown to be strongly associated with socio-economic characteristics of a child's position and with the relative levels of education, income and occupation of the family in which the child is raised" (p. 685). Roos et al. report on the grade 12 performance on the

provincial examination of all children who were born in Manitoba in 1984 and were tracked for 18 years. The performance of these students on the provincial examinations was assessed according to socioeconomic indicators such as family receipt of social assistance, affluence of neighborhood of residence, and the age of the mother at her child's birth. Roos et al.'s findings suggest that family financial background is a main indicator of performance or student outcomes on standardized tests. Their study also revealed that the proportion of youths in families receiving social assistance judged to have passed their language arts exam drops from 80% to 12%, depending on whether those taking the test on time or children born in 1984 who should have taken the test are counted. The math test revealed the same pattern, with the pass rate dropping from 76% to 10%.

With respect to the socioeconomic indicator of relative affluence of the neighbourhood of residence, the pass rates were less than half those in the wealthiest (33% versus 72% for language arts, 23% versus 52% for math). Roos et al.'s (2006) study also found that the maternal age of the mother at birth was also an indicator of provincial exam performance. Specifically, it found that 28% of children with teenage mothers passed the test, compared to those of youth whose mothers were 25 years or older at the time of the child's birth. The findings of this study reinforce the position that there is a direct correlation between SES and academic performance on standardized testing; in other words, standardization simply reproduces societal differences or inequalities; hence, non-instructional factors explain variance in test scores (Roos et al, 2006).

In addition, standardized tests may be critiqued for assessing abilities that are not

impacted by teacher intervention. The standardized test performance of students is not determined by teacher intervention, but by *cultural capital*, which encompasses a student's socioeconomic status and experiences outside of class (Meaghan & Casas, 2004). According to English (2002), standardized tests are consistently biased and discriminatory against the poor and racialized groups; this bias accounts for the achievement gaps between African-American and Latino students and their white counterparts in the United States.

On the premise that SES is a form of cultural capital, English (2002) writes that accountability systems grounded in standardization are "based on false notions of fairness and equity" (p. 298). English cites Wilkins (2000) who differentiates between the opportunity structure provided within schools (the economic opportunity structure [EOS] and those afforded in the demographic opportunity structure [DOS]. DOS encompasses (a) financial capital, or the median household income; (b) human capital or the level of parents' education; (c) cultural capital, or the embodiment of status and expectations that is needed to be a member of a dominant group or clan, and (d) geographic capital which entails the level of urban influence in a community. Wilkins's study found that 50% of the variance in standardized test pass rates was determined more by DOS and not the EOS. In essence, English argues that the low success rate of minority students may be attributed in embedded notions of cultural capital and not objective notions of "ability." Thus, standardized tests are not meritocratic or neutral systems blind to cultural difference.

Lastly, standardized testing may be critiqued for its negative impact upon student enjoyment of learning. Because reading tests often evaluate reading skills as opposed to

the ability to read and comprehend, "the pleasure of reading dissipates as the appreciation of literature gives way to concerns about the mechanics of writing" (Meaghan & Casas, 2004, p. 37). The same effect occurs in the study of mathematics as standardized tests effectively measure the ability to perform mathematical procedures, rather than any real understanding of underlying concepts (Meaghan & Casas, 2004).

Summary

The rapid expansion in the participation of countries in international testing constitutes the *global story.* It represents a *global story* as students worldwide prepare for similar tests and experience a uniform educational culture (Spring, 2009). The spread of large-scale assessment may be explained in the context of globalization, either through a "Common World Educational Culture" or "Globally Structured Agenda for Education" (Dale, 2000). International assessments have impacted national or local school systems as preparation or dissatisfaction with results have lead policy makers to adjust curricula and further standardization (DeBoer, 2010; Pineda, 2010; Spring, 2009). These policy changes have been made with the aim of upholding or attaining a competitive position in the global knowledge economy (Pineda, 2010). Standardization also constitutes the *local* or *cultural story* as large-scale provincial testing, in one form or another, is a feature of Ontario's school system and that of other provinces (Drake, 2010). Despite its aims of ensuring accountability and economic competitiveness, standardized testing may be critiqued or challenged on the grounds that it narrows the curriculum, impedes the development of critical thinking, problem-solving and collaboration skills, and harms student motivation and self-efficacy, among other things (Meaghan & Casas, 2004). In many respects, large-scale or standardized assessment represents the *Old Story*.

CHAPTER FOUR: THE EMERGING NEW STORY OF A*f*L

In the context of standardization, a new story has arisen with respect to assessment. This new story entails an emphasis on classroom-based assessment or A*f*L, and is evident in jurisdictions across Canada; thus, constituting a new *cultural story*.

The Local or Cultural Story of A*f*L

In the Maritime provinces, this new focus on assessment can be seen in the development of the *2009-2012 Strategic Plan* by the Council of Atlantic Ministers of Education, which includes a review of the contemporary assessment tools for early childhood education and assistance for educators to learn differentiated instruction, and a larger range of instructional strategies and classroom-based assessments. In Quebec, the Quebec Ministry of Education (Ministère de l'Éducation) produced a document in 2002 entitled, *Evaluation of Learning at the preservice and elementary levels framework* which advices "educators and preservice educators to evaluate competent development with assessment tasks that are authentic, rigorous, coherent, flexible, meaningful and that offer stimulating challenges adapted to meet student need and interest" (Drake, 2010, p. 7). This direction on evaluation corresponds with the principles of A*f*L. In addition, the 2003 Quebec Ministry of Education document, *The Policy of Evaluation of Learning* for the general education of youth and adults presents a method for assessment and evaluation that aligns with A*f*L (Drake, 2010). In Ontario and the Western provinces, A*f*L widely encompasses assessment *for* learning, assessment *as* learning, and assessment *of* learning (Drake, 2010). *Rethinking Classroom Assessment with Purpose in Mind*, published by the Manitoba Ministry of Education, and the OME's (2010) *Growing Success* reflects this

shift to A*f*L. With the publication of the *Growing Success* document in Ontario, AfL thus constitutes a *local story*.

The Global Story of A*f*L

From the perspective of the *Story Model*, A*f*L also represents a larger *global story* as it is international in scope, occurring in countries such as the United States, the United Kingdom, Australia, New Zealand, and Singapore (Drake, 2010). In 2005, the Centre of Educational Research and Innovation (CERI) at OECD published research undertaken from a study on "formative assessment" in secondary education systems of the following eight countries: Canada, Denmark, England, Finland, Italy, New Zealand, and Scotland. Despite the differing cultural contexts, the CERI study found that the practices of teachers at the classroom level were remarkably alike. Teacher practices with respect to assessment *for* learning were similar across countries; these similarities in practice could be seen in feedback given to students on their work, their development of self- and peer assessment, and the implications of peer assessment for group work (Sebba, 2006). Though classroom-level practices are alike regardless of cultural context, "perceptions of these, however, by students, teachers, senior school managers, and teacher educators may differ as a result of the considerable differences in national policy contexts" (p. 196). Nonetheless, the practice of A*f*L in different countries or cultural contexts highlights an emerging *global story*.

From a local and cultural perspective, Earl and Katz's (2006) *Rethinking Classroom Assessment with Purpose in Mind* provides an extensive understanding of the move toward the practice of A*f*L in Canada. Earl and Katz challenge the traditional approach of classroom assessment for most of the 20th century whereby

"classroom assessment was considered a mechanism for providing an index of learning" (p. 3) that heeded the predictable pattern of a test after the material that was taught. Earl and Katz underline that while "learning was thought be an accumulation of atomized bits of knowledge that are sequenced, hierarchical, and need to be explicitly taught and reinforced" (p. 3), it is "now viewed as a process of constructing understanding, during which individuals attempt to connect new information to what they already know, so that ideas have some personal coherence" (p. 3). Furthermore, their work challenges the traditional method of assessment by pointing to the fact that "recent research suggests students will likely be motivated and confident learners when they experience progress and achievement, rather than the failure of defeat associated with being compared to more successful peers" (p. 4). Both *Rethinking Classroom Assessment with Purpose in Mind* and the OME's *Growing Success* outline that A*f*L, specifically, assessment *for* learning, assessment *as* learning, and assessment *of* learning can help to achieve these aims. The above mentioned types of assessments are described and defined below.

Assessment *for* Learning

Assessment *for* learning happens throughout a student's learning process. It allows for teachers to seek and acquire visible evidence about a student's understanding, so that they can determine the future direction of learning. Teachers utilize assessment as an investigative mechanism from which they can decide what students already know, where they need to go from there, and the best instructional strategies or approach to move forward (Earl & Katz, 2006; OME, 2010).

Growing Success outlines that assessment *for* learning may encompass either

diagnostic or formative assessment. Diagnostic assessment is undertaken by teachers prior to instruction so that they can ascertain a students' preparedness to learn new knowledge and skills, as well as to acquire new information with respect to preferences and interests. As opposed to before instruction, teachers undertake formative assessment in an ongoing process as students acquire knowledge and practice their skills (OME, 2010).

In practice, diagnostic assessment enables teachers to discover what they already know or their prior knowledge, preconceptions, gaps, and learning styles. This information gathered enables teachers to differentiate and personalize instruction and learning, as well as work with students to establish learning goals (Early & Katz, 2006; OME, 2010). Drake (2012) suggests a number of strategies to determine which students "get it" or where they are at. Theses instructional strategies include the use of high tech devices such as clickers or cell phones, low-tech strategies such as thumbs up-thumbs down, and individual whiteboards and markers to determine students' understanding after something specific has been taught. Drake (2012) also outlines other diagnostic strategies such as having students write 1-minute essays to determine what concepts and misconceptions they may have, and the use of exit cards whereby students write down on index cards one item they learned and one item they still need to learn before leaving class. With respect to formative assessment, teachers utilize it in order to determine the continuum of learning for individual students in relation to curriculum expectations. This process of formative assessment enables teachers to guide learning, scaffold next steps and differentiate instruction and assessment in accordance with the needs of individual students (Earl & Katz, 2006; OME, 2010).

Assessment *as* Learning

Assessment *as* learning concentrates on the student and views assessment as a mode of student metacognition. Assessment *as* learning derives from the notion that learning does not simply entail the transferring of ideas from a teacher who is knowledgeable to a receptive student, but rather an "active process of cognitive restructuring that occurs when individuals interact with new ideas" (Earl & Katz, 2006, p. 41) whereby students create their own understanding. In this process, students employ metacognition as they learn to be critical assessors, monitor their own learning, and alter or modify their thinking for new learners (Earl & Katz, 2006). The *Growing Success* document states that the purpose of assessment *as* learning encompasses "the explicit fostering of students' capacity over time to be their own best assessors, but teachers need to start by presenting and modelling external, structural opportunities for students to assess themselves" (OME, 2010, p. 31).

The *Growing Success* document explains that assessment *as* learning involves formative assessment that occurs in a continuous and recurring manner during instruction, with direction and guidance from the teacher. The ongoing instruction, support, monitoring, and guidance that students receive from the teacher should be used by them "to provide feedback to other students (peer assessment), monitor their own progress toward achieving their own learning goals (self-assessment), make adjustments in their learning approaches, reflect on their learning, and set individual goals for learning" (OME, 2010, p. 31). Assessment *as* learning seeks to foster students' independence in learning as they learn to monitor their own learning, reflect on their degree of understanding and progress and set their personal learning goals (Earl & Katz, 2006; OME, 2010).

Assessment *of* Learning

Assessment *of* learning pertains to strategies devised that verify students' knowledge, demonstrate whether or not they have attained curriculum expectations or the aims of individualized programs, or confirm achievement and decide upon a student's appropriate program of or placement for the future (Earl & Katz, 2006). It aims to present evidence of achievement or proficiency levels to parents, other educators, the students themselves, and occasionally outside groups such as employers, or other educational institutions. The *Growing Success* document directly cites Earl and Katz in outlining the following purpose of assessment *of* learning: "Assessment of learning is the assessment that becomes public and results in statements or symbols about how well students are learning. It often contributes to pivotal decisions that will affect students' future" (OME, 2010, p. 31). The nature of assessment *of* learning is summative as it takes place close to the end of a period of learning, and may be used to inform future instruction. *Growing Success* advices that the information obtained from summative assessments should be utilized "by the teacher to summarize learning at a given point in time" (OME, 2010, p. 31). The teacher employs the summary in order "to make judgements about the quality of student learning on the basis of established criteria, to assign value to represent that quality, and to support communication of information about achievement to students themselves, parents, teachers, and others" (OME, 2010, p. 31).

A*f*L and Its Advantages to Student Learning

A*f*L may be viewed as advantageous to learning because it fosters motivation, as well as collaboration and communication skills (Black & William, 2006a; Clark, 2008).

Motivation

Motivation may be defined as "the conditions and processes that account for the arousal, direction, magnitude, and maintenance of effort" (Harlen, 2006, p. 61). It is a fundamental component of education as it induces the necessary time and effort required for learning and solving problems. In this regard, motivation may be regarded as a catalyst for teaching and learning (Harlen, 2006). If a learner has a higher motivation, he or she will commit more time and effort to a particular task; motivation thus proves essential as learning needs sustained concentration and effort (Earl & Katz, 2006). From a 21st century standpoint, the development of motivation for learning constitutes an important aim of education so that students "are able to adapt to changing conditions and problems in their lives beyond formal schooling" (Harlen, 2006, p. 63). As conditions rapidly change, it is imperative for individuals to have a strong motivation to learn new skills and to find pleasure in the challenge (Harlen, 2006).

Assessment represents a significant practice of teaching and learning that has the power to foster or impede learning. Stiggins asserts that "teachers can enhance or destroy students' desires to learn more quickly or permanently through their use of assessment than through any other tools at their disposal" (as cited in Harlen, 2006, p. 62). According to Harlen (2006), motivation is comprised of the four following components: locus of control, self-esteem, self-efficacy, and self-regulation. "Locus of control" denotes whether learners discern the sources of their success or failure as arising from factors under their control or those dominated over by others (external locus). Self-esteem encompasses the confidence that one holds about his or her ability to learn, as well as the value that one holds of himself/herself as both an individual and learner.

Although similar to self-esteem and locus of control, self-efficacy concerns how adept a learner views himself/herself with respect to achieving success at a given task or type of task. Self-regulation refers to the desire of students to act in ways to advance their learning; self-regulated learners take initiative and learn to employ strategies in order to improve and evaluate their learning (Harlen, 2006).

Black and William's findings from the King's-Medway-Oxfordshire Formative Assessment Project (KMOFAP) reveal that assessment for learning practices can enhance motivation or a student's willingness to learn. Specifically, the study found that assessment *for* learning served as a catalyst whereby students became "active learners who can take responsibility and manage their own learning" (Black & William, 2006a, p. 18). The higher level of motivation that students exhibited in the KMOFAP or A*f*L classroom may be understood within the context of self-regulation and metacognition. Many of the activities in the classroom were metacognitive in their approach and required a learning orientation. Self-regulation was a key facet of learning as "it would be required that students would reflect on new strategies that had been involved" (Black & William, 2006b, p. 92).

In this regard, self-regulation constitutes a factor that significantly affects learning. Dann (2002) writes that the elements of self-regulation, whether self-efficacy, motivation, metacognition and feedback, "can all be aspects of learning, whether of self-regulation or not" (p. 122). The elements of self-regulation can impact learning as they constitute some of the ways by which students "influence and exercise control over their own learning, and how they make sense of their experiences and build upon them" (p. 122). Moreover, they may be utilized in manners that allow students to understand their

learning, make judgments about it, and determine the best way to advance forward. In this respect, assessment and learning come to form part of the same process (Dann, 2002).

Assessment *for* learning also proves advantageous because it enhances the self-esteem of learners, particularly, low-achieving students. In classrooms where the learning culture emphasizes rewards, numerical grades, or classroom ranking, students' self-efficacy, self-esteem, and locus of control may be impacted in a negative way. Where a classroom culture is directed toward numerical grades or performance orientation, students focus on the most effective means to acquire high marks, as opposed to improving their learning. In a mark-driven classroom culture, a students' self-efficacy might not be enhanced as they may avoid a difficult task if they are given an option. Furthermore, students may be hesitant to ask questions out of fear in a classroom where time and effort is spent on searching for hints to the "right answer."

As a component of motivation, self-efficacy is described as "I can vs. I can't" by Anderson and Borke (as cited in Harlen, 2006) who assert that it is a learning response that develops over the course of a student's learning and his or her experiences with failure. If a student has a reoccurring experience of failure with a specific type of task, there is a greater chance that he or she will come to believe in an inability to succeed. Harlen (2006) writes that "the student develops a condition described as 'learned helplessness,' characterized by a lack of persistence with a task or even an unwillingness to put enough effort into it to have a chance of success" (p. 67). Where learning exercises are perceived as competitions with losers or winners, students who have a history of loses "will see little point in trying" (Black, Harrison, Lee, Marshall, & William, 2004, p. 18).

In this regard, assessment plays a central role in the self-efficacy of students; it should thus be designed and implemented in a way to enhance, rather than impede its development (Harlen, 2006).

Furthermore, a pupil's self-perception or self-esteem may be negatively affected in a classroom culture where learning is focussed on numerical grades or competition (Black & William, 2006b; Black & William, 2010). In a classroom defined by competition, students who experience difficulty come to see themselves as lacking ability. As a result, their self-perception is lowered and any learning difficulties are ascribed to personal deficiency which they cannot remedy (Black & William, 2010). Students refrain from devoting any effort to a task that will lead to disappointment, but rather attempt to enhance their self-esteem by other means (Black & William, 2010). According to Black and William (2010), "as long as students believe that effort on their part cannot make much difference because of their lack of 'ability,' efforts to enhance their capability as learners will have little effect" (p. 92).

Motivation and Formative Assessment

The formative assessment aspects of A*f*L can yield positive results for motivation, specifically, the self-efficacy and self-esteem of learners. Through formative assessment, a "culture of success" can be established in a classroom whereby an obsessive emphasis on competition and fear of failure on the part of lower achieving students is avoided. If communicated in a correct manner, formative assessment can be a positive tool in student learning (Black & William, 2010). Despite the fact that some students are likely to achieve less than others, it is still important to motivate everyone. Feedback can play an essential role in confronting a lack of motivation in learning (Black et al., 2004).

According to Earl and Katz (2006), assessment can foster motivation in students by

> emphasizing progress and achievement rather than failure; providing feedback to move learning forward; reinforcing that students have control over, and responsibility for their learning; building confidence in students so that they can take risks; being relevant, and appealing to student imaginations; providing the scaffolding that students need to genuinely succeed. (p. 7)

Though formative assessment can assist all students, it especially achieves positive outcomes for low-achieving students by focusing on specific problems with their work, and by providing them with a clear understanding of errors or weakness and how to rectify them. In essence, the feedback given to any student should avoid comparisons with other students, but rather should focus on the specific qualities of his/her own work and the ways by which he/she can improve (Black & William, 2010). Black and William (2010) assert that "pupils can accept and work with such messages, provided that they are not clouded by overtones about ability, competition, and comparison with others" (p. 85). In summary, Black et al. (2004) cite the following examples from studies to underline the positive effects of feedback on motivation, and in turn, student learning:

- Pupils who are informed by teachers that feedback "will assist you in learning" learn more than those who are told "how you perform shows us how intelligent you are and what marks you will receive." One can see the effect of this approach on low achievers.
- When students are presented with feedback in the form of marks, they are more likely to compare themselves with other students. Students who received feedback

in the form of comments viewed it as assistance from which they can improve. Students who regard feedback as a means for improvement (task involvement) tend to surpass those students who look at feedback as a mode of comparison (ego involvement).

- Where a system of competition existed, achievers ascribed their performance to a deficit of "ability," whereas high achievers viewed their success as the result of their effort. In contrast, all students in the task-oriented system viewed their performance as the outcome of effort. There was an improvement in performance especially among lower achieving students.
- A thorough examination of research studies on feedback revealed that it improved student performance in 60% of the cases. Feedback did not enhance student performance in situations where it simply took the form of a judgment or mark, without any suggestion for improvement. (Black et al., 2004, p. 18).

Feedback that emphasizes to students "what needs to be worked on" may help them recognize that they can improve. According to Black et al. (2004), "such feedback can enhance learning, both directly through effort that can ensue and indirectly by motivation to invest in such effort" (p. 18). The cognitive research indicates that individuals are motivated to learn by success and competence. As opposed to assessments that reward or punish, those that enhance intrinsic interests are successful at motivating students (Earl & Katz, 2006).

Motivation and Self-Assessment

In addition to feedback, self-assessment may be employed as a tool to strengthen the confidence of learners as it enables them to take responsibility for their own learning.

As a form of A*f*L, self-assessment builds confidence as it is not something that can be "done" to a student because a student must undertake a very active role in the process (Harlen, 2006). Sadler (as cited in Black & William, 2006a) argues that self-assessment constitutes a fundamental component of learning because students can only meet a goal if they comprehend the aim and can assess what they are required to do in order to attain it. Students can only assess their learning achievement if targets have been made clear to them. A clear presentation of learning targets enables students to have a precise understanding of the learning goals, so that they are to attain and determine if their work meets those aims successfully (Black & William, 2006a). Because students are often not presented with an overview of criteria or learning targets, they come to view "classroom teaching as an arbitrary sequence of exercises with no overarching rationale" of which they are passive recipients (Black & William, 2010, p. 85). By acquiring an understanding of learning targets, students "then become more committed and more effective learners" (Black & William, 2010, p. 85). In order for formative assessment to work, students need to acquire the ability to self-assess if they are to grasp the rationale of learning and what they need to do in order to achieve (Black & William, 2010).

Self-Assessment and 21st Century Skills

In this regard, self-assessment helps students to develop the 21st century skills of initiative and self-direction—of which motivation is a central component. Trilling and Fadel (2009) underline that in

> our always-on, fast-paced, flattened world of work, time for extended training and motivational development is in very short supply. Workers must arrive

> motivated, ready to use their initiative to get things done, and prepared to be highly self-reliant in everyday work. (p. 78)

The A*f*L practice of self-assessment enables students to acquire initiative and self-direction skills as outlined by the Partnership for 21st Century Skills (Trilling & Fadel, 2009). These skills encompass the ability to do the following: "set goals with tangible and intangible success criteria"; "monitor, define, prioritize and complete tasks without direct oversight"; "demonstrate initiative to advance skill levels toward a professional level; and "reflect critically on past experiences in order to inform future progress" (Trilling & Fadel, 2009, p. 79).

Collaboration

Assessment *for l*earning is beneficial to student learning because it fosters a culture of cooperation or collaboration in the classroom, as opposed to one defined by competition. Research undertaken during the two separate phases of the A*f*L program in the United Kingdom—the Assessment Action Group (AAG) and the A*f*L Programme Management Group (APMG) found that assessment *for* learning in practice created a substantive culture of cooperative interaction in the classroom. The fact that an effective classroom of cooperation prevailed where A*f*L was practiced may be attested by the positive responses of individual pupils to the notion of cooperating with other people. The findings ascertained that students enjoyed assisting one another with their schoolwork at the time of working or learning, or with regards to assessment. Because dialogue is a necessary component of A*f*L, its implementation required the cooperation of all participants—both teachers and learners (Clark, 2008).

Peer Assessment

If implemented appropriately in practice, peer assessment can create a culture of dialogue or cooperation in the classroom which can enhance learning. Peer assessment serves a valuable function because "students may accept criticisms of their work from one another that they would not take seriously if the remarks were offered by a teacher" (Black et al., 2004, p. 14). Another benefit of peer work lies in the fact that the students' exchange will occur in language that is natural to them, as they adopt the roles of teacher and assessor (Black et al., 2004). According to Black and William (2006a), students also discover that it is easier to understand criteria for their work if they look at or assess their peers' work next to their own.

A simple activity would involve the grading of homework through the "traffic lights" approach. Specifically, students identify their confidence in learning by labelling their work with a "traffic light"; they would use the colours red or amber to identify that they were completely or somewhat uncertain of their success and green to indicate confidence. Students who had marked their work with green or amber would join mixed groups in which they appraise and assist with one another's work, while the teacher would closely attend to those students who had selected the colour red (Black & William, 2006a). Teachers can implement a form of assessment *as* learning by having their students work in peer groups to grade each other's test papers. Students would be required to appraise one another's work through the traffic light approach. The assessment of peers' work would pose a challenge to students as they would be required to devise their own marking rubric; the creation of a marking rubric would necessitate that students "think about the purpose of a question and about which criteria of quality

apply to responses" (Black & William, 2006a, p. 16). In the aftermath of peer marking, teachers could allot time toward discussing those questions that students experienced difficulty with (Black & William, 2006a).

Within an A*f*L classroom, cooperative learning behaviour among peers may be fostered through the utilization of such peer groups or "cooperative learning groups." Clark (2008) writes that "cooperative learning groups are characterized by a) positive interdependence; b) individual accountability; c) face-to-face promotive interaction and; d) appropriate use of interpersonal and small-group skills and group processing" (pp.3-4). Cooperative learning groups not only stimulate more positive relationships among students, but they significantly contribute to higher achievement and better psychological health. Clark argues that cooperative groups or learning strategies establish more confident and competent students. The interaction of students in small groups enhances problem-solving skills, as well as the comprehension of the material. For Clark, the advantages of cooperative learning also include the strengthening of social communication and negotiation skills.

Peer Assessment and 21st Century Skills

Assessment *for* learning thus advances the development of the 21st century learning goals of communication and collaboration as identified by the Partnership for 21st Century Skills—P21 (Trilling & Fadel, 2009, p. 54). Trilling and Fadel (2009) assert that "the demands of our times call for a much wider and deeper personal portfolio of communication and collaboration skills to promote learning together" (p. 54). With respect to collaboration, P21 outlines that students should, among other skills, "demonstrate ability to work effectively and respectfully with diverse teams" (P21, n.d.,

"Collaborate With Others," para. 1). For cooperation skills, P21 identifies that students should be able to "use communication for a range of purposes (e.g.; to inform, instruct, and persuade)" (P21, n.d., "Communicate Clearly," para. 3). In this regard, peer assessment, in its various forms, requires students to work effectively and respectfully in groups, and to use communication in order to "inform, instruct, and persuade" (P21, n.d., "Communicate Clearly," para. 3) for their overall educational improvement.

A Constructivist Classroom: A Change in the Role of Teacher and Student

Another advantage of assessment *for* learning entails the formation of a constructivist classroom. Black and William's (2006a) findings from the King's-Medway-Oxfordshire Formative Assessment Project (KMMOFP) found that a change in the learning environment and role of teacher occurred with the implementation of formative assessment or A*f*L strategies. This transformation occurred because the outcome of A*f*L strategies requires an alteration of the "classroom contract" between the teacher and student; specifically, the rules that delineate and validate the behaviours between teachers and students (Black & William, 2006a). In an A*f*L classroom, students are required to transform their behaviour from "passive recipients of the knowledge offered by the teacher to becoming active learners who can take responsibility for their own learning" (Black & William, 2006a., p. 18). In the KMOFAP classroom, the teachers had to alter their role from that of a "presenter of content to a leader of an exploration and development of ideas in which all students were involved" (Black & William, 2006a, p. 17).

Although many teachers initially found this new approach to be scary as they feared losing control of their classroom, they came to regard their actions as a sharing of

responsibility for learning with the class. On the other hand, students developed into active learners, rather than passive ones as they became "aware of when they are learning and when they are not" (Black & William, 2006a, p. 18). In this respect, the notion of assessment as a feature of learning, as opposed to a measure of it needs to be advanced. A constructivist theory underlines the significance of pupils making sense of their learning (Dann, 2002).

Summary

In the context of standardization, A*f*L represents a new story with respect to assessment. It represents part of a new *global story* as it is practiced in countries such as the United States, United Kingdom, New Zealand, and Singapore (Drake, 2010). A*f*L also constitutes a new local or *cultural story* as evidenced by Ontario's *Growing Success* document, Manitoba's *Rethinking Classroom Assessment with Purpose in Mind*, and other publications produced by Canadian provincial ministries of education. A*f*L, in the form of assessment *of, for*, and *as* learning, challenges the traditional form of teaching and assessment that views students as passive recipients of knowledge. It acts as a catalyst for learning whereby the student takes an active role in managing and being responsible for his or her learning (Black & William, 2006a.). The advantages of A*f*L to student learning include the fostering of motivation and active learning in students, as well as collaboration and communication skills (Black & William, 2010). In this regard, A*f*L develops many qualities or skills in students that are impeded by standardized testing.

CHAPTER FIVE: THE IDEAL FUTURE—MEETING 21st CENTURY LEARNING GOALS

The 21st century has brought about significant changes which require an alteration in education with respect to what individuals need to know and how they learn in order to be successful students, workers, and citizens (Trilling & Fadel, 2009).

21st Century Skills: What Are They?

An increasing number of business leaders, politicians, and educators are in agreement with the view that pupils require "21st century skills" in order to be successful in today's economy (Rotherham & Willingham, 2009). While teaching the basic skills of reading, writing, and mathematics has been a focus of public education since its beginning, there has been a demand in recent years, as outlined above, to teach students 21st century learning skills. In the United States, the Secretary of Education, Arne Duncan has described 21st century skills as those "that increasingly demand creativity, perseverance, and problem solving combined with performing as well as part of a team" (as cited in Larson & Miller, 2011, p. 121).

A clear framework for 21st century learning has been devised by the P21, which is the foremost organization that promotes 21st century skills. This framework outlines the skills, knowledge, and experience which students require in order to gain successful entry into the workforce. The outcomes of student learning entail the following: "1) Core Subjects and 21st Century Themes; 2) Learning and Innovation Skills; 3) Information, Media, and Technology Skills; 4) Life and Career Skills" (Larson & Miller, 2011, p. 121). Specifically, the P21 adds the 21st century subject themes of financial, health, and environmental literacy to the traditional core subjects of reading, writing, language arts,

world languages, mathematics, sciences, et cetera. The 21st century skills of learning and innovation emphasize critical thinking and problem solving, communication and collaboration, and creativity and innovation. Life and career skills focus on those skills that enable students to be work-ready and prepared for life; these work and life skills entail flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, and productivity and accountability (Trilling & Fadel, 2009). Similar to the P21, the International Society for Technology in Education affirmed that students in our current digitalized world require skills in the following areas: "1) Creativity and Innovation; 2) Communication and Collaboration; 3) Research and Information Fluency; 4) Critical Thinking, Problem Solving, and Decision Making; 5) Digital Citizenship; and 6) Technology Operations and Concepts" (Larson & Miller, 2011, p. 121). Although there are different ways to regard the precise content and definition of 21st century skills, they all underline "what students can do with knowledge and how they apply what they learn in authentic contexts" (Larson & Miller, 2011, p. 121). The core of "21st century learning" entails the acquisition of effective communication and collaboration skills, proficiency in the use of technology, innovative and creativity skills, and the capacity to find solutions to problems (Larson & Miller, 2011).

21st Century Learning Skills: Are They Completely New?

Silva (2009) writes that the need to know how to think critically, analytically, and creatively does not encompass a skill set that is restricted to or particular to the 21st century. The fact that such skills are not unique to the 21st century is evident as critical thinking and problem solving have been an essential facet of human advancement "throughout history, from the development of tools, to agriculture advancements, to the

invention of vaccines, to land and sea exploration" (Rotherham & Willingham, 2009, p. 16). Furthermore, even such skills as information literacy and global awareness have existed for centuries; however, this knowledge was often confined to the elites in past societies. The acquisition of differing types of knowledge, from facts to complex analysis, can be found to date as far back as the third century in Plato's discussion of the various intelligences in the *Republic* (Rotherham & Willingham, 2009).

Though there have been calls for the development of such skills by philosophers and educators from Socrates in antiquity to John Dewey in the 20th century, they have been augmented in our time as the nature of the economy and work have been transformed (Silva, 2009). The character of the economy has changed as computers now undertake work that necessitated routine work at one time. Moreover, the 21st century worker, regardless of economic sector, needs to possess the ability to discover and analyze information that often derives from several sources, and utilize this information to arrive at decisions and innovate new ideas. In this context, Silva (2009) argues that "21st century skills are not new, just newly important" (p. 631).

21st Century Skills and Their Relevance for the Global or Knowledge Economy

The 21st century requires individuals with certain skill sets, as described below, in order to meet the demands of the global or knowledge economy.

Learning and Innovation Skills

As already noted, the 21st century skills of critical learning and innovation encompass the following: "critical thinking and problem solving (expert thinking);" "communication and collaboration (complex communicating)"; "creativity and innovation (applied imagination and invention)" (Trilling & Fadel, 2009, p. 49). These

skills are of utmost importance to the 21st century global economy, which necessitates high levels of imagination, creativity, and innovation for the invention of new and superior services for the global marketplace (Trilling & Fadel, 2009). Due to the loss of manufacturing to emerging economies and the significant reduction in labour-intensive employment in the old industrial economies, a new type of employment has arisen which depends upon an extensive degree of specialist knowledge, as well as creativity and innovation. For countries to maintain their competitive position in this new global economy, it is imperative that they devise new ideas for products and services. In this regard, education constitutes a crucial element to developing the "powers of creativity and innovation" (Robinson, 2011, p. 6).

The skills of creativity and innovation also need to be accompanied by those of communication and collaboration in order to meet the demands of the 21st century economy. In addition to being creative and critical thinkers, individuals need to be able to communicate and work well with one another in order "to create new knowledge and innovations that help build a better world" (Trilling & Fadel, 2009, p. 9). According to Robinson (2011), employers desire personnel who possess the ability to think creatively, innovate, communicate well, and work in teams. In the business sector, creativity and collaboration are both essential for the design process and the optimization of projects. Though Robinson notes that "creativity loves collaboration" (p. 235), he stresses that assembling people of various disciplines does not ensure innovation and can even be a hindrance "unless teams have working processes in which differences become strengths rather than weaknesses" (p. 235). It is thus imperative for members of a team to have effective collaboration skills so that individual creative impulses are not stifled by

"negative criticism, cynical put downs or dismissive remarks" (Robinson, 2011, p. 236). Collaborators, who are effective, possess the ability to strengthen and further develop the contributions of members on a team (Robinson, 2011).

Digital Literacy Skills

The P21 describes digital literacy skills as encompassing the following: information literacy, media literacy, information and communication technology (ICT) literacy. The digital literacy skills address the 21st century requirement that individuals have the capacity to properly assess, evaluate, use, manage, and add to the vast array of information and media that they have at their disposal (Trilling & Fadel, 2009). Specifically, information literacy entails the ability to "access information efficiently and effectively," "evaluate information critically and competently," and "use information accurately and creatively" (Trilling & Fadel, 2009, p. 65). Media literacy denotes the ability to access, analyze, evaluate, and create messages in different forms (whether print, graphics, animation, audio, video, websites), acquire an understanding of media's function in society, and construct one's own message or express oneself through different media. Finally, ITC literacy skills encompass the ability to use both non-digital and digital technology to research, manage, evaluate, create, and communicate information to operate successfully in a knowledge economy (Trilling & Fadel, 2009).

Technological and digital literacy represent key skills in the transformed economy of the 21st century. Whereas the majority of jobs in the 1950s and 60s involved manual labour, the last 30 years have seen a move from industrial and manual work to jobs that are grounded in information technology and providing services. Though the preeminent global corporations of the past were found in industry and the manufacturing sectors, the

current ones are involved in communications, information, entertainment, science, and technology. Since the 1980s, e-commerce and e-trading have completely altered the traditional modes of undertaking business. The unexpected growth of the internet and the rapid popularity of social networking sites such as Facebook and Twitter have had a far-reaching impact on culture and commerce (Robinson, 2011). The rapid expansion of the internet and virtual world proves evident in the formation of big businesses such as Google, Youtube, Yahoo, eBay, and Amazon, along with smaller ones as well (Zhao, 2009).

In this context, Zhao (2009) argues that *digital competency*, which entails the skills required to live a productive life in the virtual world, is a necessity for the 21st century. For Zhao, digital competency constitutes an important skill as individuals often take on the roles of consumer, citizens, and community leaders in the virtual world. In the 21st century, individuals utilize the virtual world as a means by which they satisfy both their needs in the physical and virtual world. These needs are met as "we e-mail our friends, buy books on Amazon, sell used cars on eBay, watch YouTube, or search for information using Google" (Zhao, 2009, p. 178). The popularity of the virtual world has in turn led to employment and careers in not only e-commerce, but in the development of hardware, software, or virtual communities. Furthermore, individuals also act as leaders in the virtual world as they often attempt to influence others through the utilization of virtual tools such as Facebook or MySpace. According to Zhao, "we need our children to become digitally competent so they can live safely and productively in this newly emerging world" (p. 180), which is increasingly virtual. Zhao writes that digital competencies, and their associated skills and abilities "will prove to have a comparative

advantage in the global economy" (p. 180). For this reason, it would be advantageous to provide students with an education in which they develop the skills and abilities that would make them *digitally competent* (Zhao, 2009).

Career and Life Skills

As already noted, career and life skills comprise the following skills: flexibility and adaptability, initiative and self-direction, productivity and accountability, as well as social and cross-cultural skills. Due to the enormous change of this time period, flexibility and adaptability are regarded as crucial for learning, work, and citizenship in the 21st century. The dramatic speed of technological change has had the effect of requiring individuals to adjust rapidly to new modes of communicating, learning, working, and living. The nature of the 21st century economy necessitates that individuals regularly change jobs and careers as new types of work emerge from innovations in the various sectors (Trilling & Fadel, 2009). Robinson (2011) notes that "as the world spins faster and faster, organizations" (p. 2) do not only need individuals who can think creatively, communicate, and collaborate, but ones "who are flexible and quick to adapt as well" (p. 2). Similarly, Trilling and Fadel (2009) assert that "adjusting and adapting strategies is an essential "flex-ability" that everyone must develop in fast changing times" (p. 76). The capacity to adapt—which entails being able to examine a problem from a different angle—allows for creative solutions and innovations which the 21st century necessitates (Trilling & Fadel, 2009). For instance, the ability of workers to be flexible and adaptable enables businesses to react appropriately and effectively to market changes (Robinson, 2011).

In addition, students must acquire initiative and self-direction skills in the 21st century economy as the fast-paced nature of work offers little time for lengthy training and motivational training. Today's managers do not have enough time to allocate toward the mentorship and guidance of workers. Trilling and Fadel write that workers, as a result, "must arrive motivated, ready to use their initiative to get things done, and prepare to be highly self-reliant in everyday work" (p. 78).

Moreover, students must acquire the important skills of productivity and accountability. Business and education sectors require workers and learners that are productive. The skill set of productivity and accountability encompasses "setting and meeting goals, prioritizing work, and using time well" in order to work and learn effectively (Trilling & Fadel, 2009, p. 82).

Lastly, social and cultural interaction skills are necessary for students to develop as the globe is becoming increasingly more connected through technology in the 21st century. According to P21, the attainment of social and cultural skills encompasses the knowledge of when it is appropriate to speak or listen; how to conduct oneself in a respectable and professional manner; a respect for cultural diversity and the ability to work effectively and creatively with individuals from different cultural and social backgrounds; and the capacity to respond with tolerance to different values and ideas (Trilling & Fadel, 2009). Trilling and Fadel (2009) assert that "understanding and accommodating cultural and social differences, and using differences to come up with even more creative ideas and solutions will be increasingly more important throughout our century" (p. 80).

Zhao (2009) utilizes the term, "cross cultural competency" to describe the capacity of developing a global mindset through an understanding of other cultures. In order for individuals to acquire this global perspective, they need to have direct interaction which only occurs by moving across cultures. For Zhao, a true understanding or appreciation of cultures cannot be attained "from simple fact telling in international education classes, which are easily colored by superficial emotions, ignorance, fear and prejudice" (p. 174). Rather, cultural competency necessitates a substantive understanding of other cultures which can only be arrived at by experiencing the culture in context, and not by memorizing facts or adopting stereotypes. Moreover, cultural capacity involves the ability to settle in and travel across differing cultures with facility. Because it is hardly possible to be competent in every single culture in the globalized world, one can effectively interact with people from various cultures by developing a general psychological ability that includes attitudes, perspectives, and approaches to new, different cultures" (Zhao, 2009, p. 174).

John Dewey advances that this cultural competency may be achieved "by confronting and surmounting differences in ways of thinking, value systems, and habits of mind" (as cited in Zhao, 2009, p. 174); this mode of thinking, however, can be attained if individuals with different perspectives interact with each other. In the 21st century, cross-cultural competency represents an essential ability because individuals, as global citizens, will have to work along with people of different cultural backgrounds throughout their professional careers. As communities have become increasingly diverse through immigration, the capacity to interact with and make decisions about people with different backgrounds represents an essential facet of

citizenship (Zhao, 2009). Robinson (2011) writes that complex economies require people with, among other qualities, a sophisticated "global acumen" (p. 69) and "knowledge of different cultures" (p. 69).

Toward a Future Ideal Story: Aligning Teaching, Learning, and Assessment to Meet 21st Century Demands

In order to ensure that all students acquire 21st century skills, it is essential that teachers change their approach to instruction and assessment (Rotherham & Willingham, 2009; Trilling & Fadel, 2009). The skill demands of the new global economy require a move away from the traditional approach to learning which is defined by the following practices: teacher-directed, direct instruction, time-slotted, one-size fits all, competitive, text-based, summative tests, and learning for school. While incorporating some of these practices, a 21st century approach to learning would obviously favour the following juxtaposed practices: learner-centred, interactive exchange, skills, questions and problems, practice, projects, on-demand, personalized, collaborative, global community, web-based, formative evaluations, and learning for life. Though the 21st century demand for skills of problem solving, creativity and innovation, and collaboration seems to be more conducive to this learning approach, it is imperative that one method is not entirely dispensed with in favour of the other; in other words, there needs to be an integration of both learning approaches (Trilling & Fadel, 2009). Drake (2010) writes that the foreseeable *new story* requires that we not insist "on a choice of either/or" (p. 4), but rather we "consider shifting to both/and" (p. 4). Specifically, one needs to determine what is good from the *old story*, and what is realistic from the preferred future story; these two elements need to be integrated or blended in order to move forward (Drake, 2010).

With respect to the two above learning practices, it means that "skills and knowledge are not separate, but intertwined" (Rotherham & Willingham, 2009, p. 18). In many instances, knowledge provides the means to understand the underlying structure of a problem. It is often impossible to recognize that one possesses a specific thinking skill, whether critical or problem solving, if it is not applied in relation to known content (Rotherham & Willingham, 2009). Hence, an emphasis on the application of skills and learning practices does not entail discarding the instruction of basic skills or the learning of knowledge and facts (Trilling & Fadel, 2009). Trilling and Fadel (2009) write that "becoming competent in any subject area means developing both the knowledge and the skills to apply that knowledge to the kinds of questions and problems experts in the field would tackle" (p. 39). The move to the *foreseeable story* entails finding a balance between the approaches whereby the teacher is the "sage on stage" who covers content, and the "guide on the side" who helps students to discover ideas through research and a sharing of findings from research projects (Trilling & Fadel, 2009).

In this respect, new modes of assessment are needed which can adequately measure "richer learning and more complex tasks" (Rotherham & Willingham, 2009, p. 16). The proponents of 21st century skills posit that they can be most effectively fostered through student-centred learning. Such learning and assessment practices encompass, among others, project based and problem-based learning which give students the opportunity to collaborate, work on authentic problems, and interact with the community (Rotherham & Willingham, 2009).

Problem-Based Learning (PBL) Approaches

Problem-based learning (PBL) constitutes an effective approach by which students can develop 21st century skills (Drake, 2012; Rotherham & Willingham, 2009). With foundations in the project method of the progressive education period, PBL commences with a problem or a question. Padgett (as cited in Drake, 2012) outlines three types of PBL: project-based learning, problem-based learning, and challenge-based learning. PBL is an instructional strategy in which students encounter an engaging question and develop a product that offers a solution to the question asked. PBL represents a student-centred approach whereby students are presented with an ill-structured and real-world problem (Drake, 2012). In this method, the teacher takes on the role of facilitator as students determine what they need to know and try to find solutions (Drake, 2012; Trilling & Fadel, 2009). Challenge-based learning (CBL) starts with a BIG IDEA and then involves the formation of a requisite question, a challenge, guiding questions, activities and resources. The approach of CBL establishes a process for discovering and communicating the solution to a problem. CBL entails addressing real-world problems through the utilization of everyday technology and the dissemination of findings with the rest of the world. PBL and CBL may both be transdisciplinary in scope, as a real-world problem or concept is not restricted to a particular discipline (Drake, 2012).

Project-Based Learning

Project-based learning represents a student-driven, teacher-led method of learning. Students seek knowledge by asking questions. The students then undertake research under the guidance or supervision of a teacher. When the research stage is complete, students demonstrate their findings by producing a project and conveying their

results to others (Bell, 2010). Trilling and Fadel (2009) have devised a specific model, known as the 21st Century Project Learning Bicycle, which clearly outlines the different stages of project-based learning. Specifically, the 21st Century Project Learning Bicycle model identifies the following four stages: (a) Define, (b) Plan, (c) Do, and (d) Review.

The first stage of the project entails *defining* it with a clearly and precisely stated question, issue or challenge that will direct learning. The *planning* stage involves work on the part of both the teacher and students. The teacher does not simply act as a lecturer, but as a learning coach who designs the learning activities which will enable students to undertake their learning and teaching in a more self-directed manner. The design of the project should involve the students "planning their own work, doing research, sharing findings with other team members, asking questions, designing procedures, taking on leadership and group facilitation roles, analysing their own results, getting feedback from others, and so on" (Trilling & Fadel, 2009, p. 98). A teacher's effort to ensure that the project is well designed will afford him/her more time to provide individual attention and support to each learning team over the duration of the project; in turn, it would also enable students to develop 21st century skills and acquire an in-depth understanding of the content. The *doing* stage of the project involves the teacher and students working together, "with the teacher playing the "conductor" or coach role, and the students being team members or "workers" in the project" (Trilling & Fadel, 2009, p. 98). Lastly, the final stage involves the presentation and *review* of findings from the project. The students share their project findings with other members of the community in a presentation, exhibition or learning fair. Trilling and Fadel (2009) refer to this approach as the "21st Century Project Learning Bicycle" because the *Define*, *Plan*, *Do*, and *Review*—the

different phases in the project and teaching cycles—represent the project "wheels" that steer both the students and teacher forward (Trilling & Fadel, 2009).

Project-based learning can enable students to develop learning and innovation skills. This practice improves learning outcomes as students are required to apply skills such as critical thinking, problem-solving, and creativity as they learn the content. In tackling a stated problem, students must utilize their critical thinking skills in order to find a solution. Specifically, the application of critical thinking skills involves the capacity to analyze, interpret, evaluate, summarize, and synthesize information to solve a problem. Creativity and innovation may be enhanced by having student teams engage in activities whereby they are required to focus on a real world problem and invent or design innovative solutions (Trilling & Fadel, 2009). In the new global economy, the ability to design will increasingly represent a necessary skill for individuals to find work and businesses to remain competitive (Pink, 2005; Trilling & Fadel, 2009). The Age of Innovation demands individuals who are designers, meaning that they can confront newly-arisen problems and design items and processes that are completely original. Pink (2005) writes that "design is a high concept aptitude that is difficult to outsource or automate—and that increasingly confers a competitive advantage in business" (p. 86). In this context, students' creativity and innovation may be enhanced by having them work in teams to design "easier, better, faster, less expensive, more effective, or more enjoyable" solutions to real world problems (Trilling & Fadel, 2009, p. 107).

Furthermore, students' collaboration skills are developed through project-based learning. Project-based learning fosters social learning as students exercise and gain competency in the 21st century skills of communication, negotiation, and collaboration. In

the process of undertaking these projects, students need to brainstorm ideas and listen effectively to their group members. By working collectively to devise ideas and solve a problem, students acquire the important skills of productive communication, respect for others, teamwork, and negotiation (Bell, 2010). Students not only develop communication skills through face-to-face interaction, but by presenting their findings through oral, written, and/or visual forms of communication (Trilling & Fadel, 2009). Upon the completion of their project, students engage in a self-evaluation in which they do not strictly evaluate their learning, but the success of their social interactions; they consider their own communication and listening skills, and whether or not they listened effectively to other group members' ideas (Bell, 2010). Trilling and Fadel (2009) highlight hundreds of studies that point to the advantages of students working in small teams for collective tasks, as opposed to working alone. According to Trilling and Fadel "the benefits include both greater individual and collective knowledge growth, better confidence and motivation levels, and improved social interactions and feelings toward other students" (p. 109). These qualities, along with the specific skills of communication and collaboration are essential for future success in the global economy (Bell, 2010).

Moreover, project-based learning enables students to develop career and life skills. Specifically, this learning method allows students to build upon the skills of flexibility and adaptability that are necessary for the 21st century knowledge economy, which is characterized by the by fruition of well-defined projects by global project teams on rigid time schedules and fixed resources. Flexibility and adaptability can be fostered through project-based learning because projects, whether for school, work, or the home, usually encounter unforeseeable challenges that require alteration in planning. It is often

imperative with any such project that alterations and adaptations are made in order to accommodate newly arisen situations (Trilling & Fadel, 2009). Trilling and Fadel (2009) underline that the skill sets of flexibility and adaptability may be developed by having students work on "progressively more complex projects that challenge student teams to change course when things aren't working well, adapt to new developments in the project, and incorporate new team members on both current and new projects" (p. 77).

The career and life skills of initiative and self-direction may also be developed through project-based learning. Project-based learning places an emphasis on differentiation as it takes into consideration students' diverse learning styles and preferences. Differentiation incorporates individual learning styles by enabling students to develop their own interests and seek deeper learning, as well as learn at their own level. The differentiated nature of project-based learning provides students with intrinsic motivation as they have the option to pursue their own interests and utilize their individual strengths. For instance, they are offered a choice in the tools and resources they can utilize to undertake their research. Students may also select the type of reading materials that are suitable to their reading level. Moreover, students may be intrinsically motivated to read materials at a higher level in order to acquire the necessary information for the project. In addition, students are provided with the choice of how they wish to present their findings. If students possess analytic or mathematical strengths, they have the option of conveying the findings to an audience in the form of a graph or timeline (Bell, 2010).

Furthermore, project-based learning also provides students with the opportunity to select their own learning environment, and whether they wish "to work in a quiet library

or a bustling hallway, lying down in the carpet area or sequestered in the cubby area" (Bell, 2010, p. 41). Students learn to be self-directed in their learning as they have the opportunity to make choices and appropriate decisions. Bell (2010) suggests that students become self-directed and self-confident as they "are able to make better choices, whether relating to the process, environment, or outcome which enables them to become independent and responsible for their learning" (p. 41).

Trilling and Fadel (2009) note that students who worked in project teams displayed self-direction, motivation, and independence in their learning. Despite the fact that students requested assistance at the inception of the project or some technical assistance during its process, they largely depended upon each other to find a solution to the problem. Though determining the appropriate level of student choice poses a challenge for both teachers and parents, "student-developed projects and hobbies all provide good opportunities to develop a passion for a subject and to exercise self-motivation, initiative, and self-direction" (Trilling & Fadel, 2009, p. 79).

Project-based learning also enables students to acquire the career and life skills of productivity and accountability. Trilling and Fadel (2009) write that "setting and meeting goals, prioritizing work, and using time well are all skills that support working and learning equally well" (p. 82). In the process of completing a project, students learn responsibility, independence, and discipline. The creation of an organization blueprint for the project offers guidance and enables students to remain both focussed and on-task. By developing a strong competency in project-based learning, students learn how to self-monitor their advancement through the formation of an agenda. Upon the completion of each work period, students account for whether or not they realized their aims for the

day. In order to succeed, students need to utilize their work time efficiently and to remain concentrated on the task at hand. It is imperative for teachers to deliberate continuously with students to verify that they are focussed, proceeding correctly, and fully developing their ideas (Bell, 2010).

Project-based learning also provides students with an understanding of accountability by means of daily goal setting and the expectations of peers. Students learn accountability through collaborative team work as there is an expectation that each member contributes his or her fair share of work to the project. The nature of group work establishes a reliance whereby consequences arise if a member does not contribute his or her part, or fails to exhibit accountability. The consequence may be that others will not wish to work with someone who fails to meet expectations and contribute equally to a project. In this regard, peer pressure helps to ensure the completion of on-going group tasks throughout the process, as well as the final culminating product. Students learn to be dependable and industrious as they must complete their portion of the project in the required time frame (Bell, 2010). Bell (2010) indicates that "accountability to peers often has greater consequences and provides more motivation for students than if they were only responsible to the teacher" (p. 40). Students are often concerned more about accountability to peers than to the teacher because "they do not want to let their friends down" (Bell, 2010, p. 40).

Lastly, students may build upon the skills of social and cross-cultural interaction or cultural competency through project-based learning. Project-based learning gives students the opportunity to enhance these skills through face-to-face interaction and online means. Trilling and Fadel (2009) point to the SARS Project as an example in

which students interacted and worked with others around the globe using online tools. Students from different parts of the globe and different time zones were able to create a website through the use of online technology; the online technology was used to plan, schedule, communicate, and coordinate the necessary work. Furthermore, students may gain a sophisticated cultural competency by accessing online sites such as that of the Asia Society in their research. Trilling and Fadel (2009) highlight the Asia Society as an organization which has created a number materials to enhance students' cross-cultural understanding, and "whose excellent reports and curriculum resources are helping and students go global in their learning" (p. 81). Hence, the use of online technology or tools in project-based learning may play a significant role in the fostering of cross-cultural skills.

Finally, project-based learning gives students the opportunity to further develop digital literacy skills. These digital literacy skills include information literacy—the ability to "access information efficiently and effectively," "evaluate information critically and competently," and "use information accurately and creatively" (Trilling & Fadel, 2009, p. 65). In project-based learning, students utilize the internet to conduct their research. While researching, students learn how to navigate the internet in a judicious manner and determine whether sources are credible, accurate, and reliable (Bell, 2010; Trilling & Fadel, 2009). It is necessary for teachers to establish guidelines in order to safeguard students' online exploration (Bell, 2010).

Students also acquire the digital skills of ICT literacy through project-based learning. A key component of ICT literacy involves the ability to "understand and utilize the most appropriate media creation tools, characteristics and conventions" (P21, n. d.,

"Create Media Products," para. 1). For their project, students may utilize a number of applications, including Web 2.0. During the course of the project, students may use a wiki to share knowledge or a blog to connect with group members when difficulties arise. In addition, students may utilize different types of technology to convey their learning during the presentation stage of the project. For instance, they may share their learning with the audience through the creation of a podcast, a video, a photo story, a comic, et cetera (Bell, 2010). Bell (2010) writes that "these uses of technology provide instruction to the student by demonstrating innovative usage of various applications" (p. 82). According to Bell, "these applications also help students realize appropriate ways to use technology" (p. 42). The task of using different technologies to share information enhances creativity and innovative thinking. In this regard, digital literacies also advance the learning of other 21st century skills (Trilling & Fadel, 2009).

Problem-Based Learning

Problem-based learning represents a constructivist teaching approach that assists students in learning how to think and solve problems. This method utilizes an authentic, complex problem as the catalyst for learning, which aims to further disciplinary knowledge and problem solving skills. The teacher presents the student with a confounding, open-ended problem that has a real-life context. Once the question has been posed, the teacher guides the students into an investigation from which knowledge and instruction arise (Edens, 2000). Through a case study approach, students are often engaged in projects that are directed at finding solutions to complicated real-life problems; they collectively work together in small teams to investigate, research, and solve problems that have numerous solutions and ways of finding them (Trilling & Fadel,

2009). Edens (2000) succinctly outlines the following key attributes of the problem-based model:

> (a) Learning is student-centred; (b) learning occurs in small groups; (c) teachers are facilitators or guides; (d) problems form the organizing focus and stimulus of learning; (e) problems are a vehicle for the development of problem solving skills; and (f) new information is acquired through self-directed learning. (p. 56)

Problem-based learning fosters 21st century skills as it requires students to take on a self-directed role in the construction of knowledge and engage in problem-solving and inquiry, within a collaborative framework. Flexibility also constitutes a main facet of the problem-based learning model, as the time spent on each problem differs depending on its nature (Edens, 2000). In essence, this learning approach cultivates the 21st century learning skills of problem solving, collaboration, flexibility, and adaptability, and self-direction.

The findings of research studies and meta-studies on problem-based learning indicate that its methods are commensurate or superior to those of traditional instruction for factual learning. They do reveal, however, that problem-based methods far surpass "traditional methods in developing 21st century skills like flexible problem solving and applying knowledge to real-world situations, as well as critical thinking skills such as generating testable hypotheses and communicating more coherent explanations" (Trilling & Fadel, 2009, p. 112). Students, who have engaged in problem-based learning, widely report that they formed stronger problem-solving skills and became more active and interested learners. In one study, students reported the benefits of problem-solving learning as "feeling responsible for my own learning, getting to know other classmates, improvement of problem-based capabilities" (Eden, 2000, p. 59). In summary, findings

suggest that problem-based learning proves more effective than other approaches in the development of 21st century skills.

Challenge-Based Learning (CBL)

Challenge-based learning (CBL) also represents an effective practice in building 21st century skills (Drake, 2012). A research report by the New Medium Consortium defines CBL "as a new teaching model that incorporates the best aspects of problem-based learning, project-based learning, and contextual teaching and learning while focusing on real problems faced in the real world" (Johnson, Smith, Smythe, & Varon, 2009, p. 7). CBL resembles problem-based learning as students engage in work to find solutions to real life problems. A distinct quality of CBL lies in the fact that the problems or challenges are of global significance, such as war or the sustainability of water supplies (Drake, 2012; Johnson et al., 2009). Like problem-based learning, the teacher serves the role of facilitator who does not lecture, but assists students to construct knowledge around an originally ill-defined problem. Students work in groups to clarify and define the problem, devise research questions, examine the topic through the use of diverse primary sources, and determine a number of likely solutions prior to selecting the most appropriate one. Meanwhile, the teacher acts as a coach in addressing individual questions and concerns, and assisting students to remain focussed if a problem becomes overwhelming. This process gains a relevancy as the students document the process and create a high-quality product to show their findings. The framework of CBL includes the following phases: (a) the big idea, (b) the essential question, (c) the challenge, (d) guiding questions, activities, and resources, (e) solution-action, and (f) assessment (Johnson et al., 2009)

CBL cultivates the 21st century learning skills of problem-solving, digital literacy, initiative and self-direction, communication, and collaboration. Students develop problem-solving skills through CBL as they must examine real-life problems and find solutions of local applicability; the reality of the problems or issues enables students to tie what they are learning to personal experiences. The technological component of CBL allows students to improve communication and collaboration, as well as digital literacy skills. For instance, the internet gives students the opportunity to utilize online tools for communication and collaboration, as in the modern day workplace.

CBL also enhances students' digital literacy skills as networking and media techniques make up a key facet of its approach (Johnson et al., 2009). In preparing the final products of their research to present their solutions, "students draw upon photography, videography, audio recording, and writing skills that they may already be using as web content producers" (Johnson et al., 2009, p. 9). If students are not already engaged in these digital-based activities, CBL may provide them with a chance to develop these types of high-level communication skills (Johnson et al., 2009). It has been found that CBL improves the motivation of students; the effect of CBL on motivation is noteworthy because initiative and self-direction are key 21st century learning goals. CBL motivates students to attend class regularly and perform well because it incorporates both technological tools and their daily experiences. Students become engaged as they study real-life issues, have the opportunity to find solutions, get their voices heard, and are empowered to make a difference in their community (Johnson, 2009).

The findings of a pilot study—derived from interviews and journal entries—by the New Media Consortium found a positive response to CBL from faculty,

administrators, and above all, students. One hundred percent of students reported that they were satisfied with CBL. The teachers found that students had surpassed their expectations. Twenty-eight of 29 teachers reported that students were engaged in the work and collaborated in an effective manner, while 75% of faculty observed a positive transformation in their students. The students perceived themselves as having acquired 21st century learning skills, and 80% believed that the project had made a difference in their learning (Drake, 2012).

Aligning Teaching, Learning and Assessment Through Backward Design

Drake (2012) outlines a "design down or backward design" approach to designing a curriculum that is both relevant for the 21st century and accountable. Though the 21st century has been a period of accountability through standardized testing, Drake (2012) presents an intelligent accountability which emphasizes individual and collective capacity building. For Drake (2012), accountability can be achieved through a standards-based approach that accepts the following practices for disciplinary and interdisciplinary work: "A design-down curriculum planning process is used"; "The focus is on what students will do, not what the teacher will do"; "Standards, teaching strategies, and assessment are aligned"; "The standards are observable and measurable"; "The assessment of standards is embedded in instructional strategies" (p. 28). In essence, accountability may be partially attained through an alignment of the curriculum. Alignment of the curriculum or *seamless curriculum* occurs when "the standards, content, assessment, and instructional strategies are coherent and make a complimentary fit" (Drake, 2012, p. 30).

The curriculum can be made both relevant and accountable through the "design down" approach that utilizes the Big Picture and Know/Do/Be Umbrella; this particular

template serves to align the curriculum. The *Know* entails what is important for students to know. Specifically, Big Ideas and Enduring Understanding may be viewed as the most significant thing to know; they encompass universal concepts that are abstract and wide-ranging, timeless, and transcend cultures and disciplines. Enduring Understandings represent a higher degree of understanding as it is the knowledge that students retain after the lesson or even beyond their school years. Like Big Ideas, Enduring Understandings are "broad, abstract, universal in application, and timeless" (Drake, 2012, p. 81), yet they often connect two concepts or ideas that are sometimes difficult to find in the curriculum.

The *Do* is not completely detached from the *Know*, and entails "what is worth knowing." The *Do* involves teaching important skills, which are required to process the content. Drake (2012) writes that teaching "skills does not preclude teaching content; rather, the content is a vehicle for acquiring the skills and vice versa" (p. 81). These skills may include performance skills that are embedded in the curriculum of each subject area. The *Do* may also incorporate the 21st century skills of learning and innovation, and digital literacy skills. In most cases, the skills outlined in the P21 framework can be common provincial or state standards.

The *Do* and *Be* are intertwined as the former meshes into the latter. One cannot do anything without the act resting in a value system or value-laden outlook. For example, in order for someone to *be* a global citizen, he or she needs to have the skills of cultural competency, as well as the ability to converse in different languages. Being someone or something is thus closely tied to performance skills. The 21st century skills connect with the *Be* as they entail individuals being problem-solvers, creative, innovative, and so forth. In particular, the P21 has a set of skills that constitute the *Be*. Drake (2012) specifies that

"they are under the label of Career and Life Skills and include flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, leadership and responsibility" (p. 85). Though the *being* is not explicitly stated in the curriculum, it is often implicitly found in the standards. In summary, the *Know*, *Do*, and *Be* are interconnected.

Drake (2012) writes that students' achievement may be enhanced through the seamless integration of curriculum, instruction, and assessment. Specifically, educators can improve student learning by blending the following aspects: curriculum, instruction, and classroom assessment; learning, teaching, and assessment; assessment *of*, *for*, and *as* learning; Know, Do, and Be; the head and the heart; disciplinary boundaries (Drake, 2012). In undertaking their lessons, teachers need to approach these aspects as part of a complex system whose traditional defining boundaries "blur, overlap, interconnect, and may even disappear" (Drake, 2012, p. 141). From the perspective of the teacher, there needs to be an awareness of the Big Picture while simultaneously undertaking daily lessons. Drake (2012) writes that teachers "need to approach daily lessons from a systems perspective" (p. 141).

Ultimately, teachers can most effectively align curriculum, instruction, and assessment by working with backward design. The advantage of backward design lies in the fact that students undertake work that allows them to show their attainment of the KDB. Teachers would have to design the curriculum so that there is a three-way connection between the mandated curriculum, the Know, Do, and, Be, and assessment *of*, *for*, and *as* learning. The interconnection of curriculum, instruction, and these assessment practices would involve immediate feedback that can be acted upon, diagnostic feedback,

as well as rich culminating assessment tasks in the form of project-based learning (Drake, 2012).

The Future Ideal Story: Standardized Testing and PBL Assessments

The application of the *Story Model* would involve the integration of the Old Story with the new one to understand the future direction of assessment. The New Story would thus involve both standardization *and* new modes of assessment in the form of PBL. Standardization *and* PBL have been implemented in some school jurisdictions in the United States and United Kingdom. It should be noted that these standardized tests have been used to measured content knowledge or subject proficiency, and not 21st century skills. Regardless, studies have revealed that students who are engaged in project-based learning tend to outperform peers who are educated in traditional modes of instruction. A British study involved implementing PBL at one school over a three year period, and measuring its test results against a school where traditional math programs were utilized. This study found that students who were taught using PBL performed better on national examinations than those taught in a traditional manner (Bell, 2010). Particularly, it was discovered that "three times as many students achieved the highest possible mark on the national grade than the students at the traditional school" (Bell, 2010, p. 40). The research came to the conclusion that the students attained a unique form of knowledge through the use of PBL (Bell, 2010).

In a U.S. study, it was found that the use of PBL significantly raised the test scores of elementary schools in Iowa. The use of PBL by three schools in Dubuque, Iowa enabled two of them to increase their IOWA Test of Basic Skills from "well below average" to the district average, while the other attained scores of "well above the district

average" (Bell, 2010). Furthermore, the increases in reading scores "ranged from 15% in one school to over 90% in the other two schools while the district average remained the same" (as cited in Bell, 2010, p. 40).

Similarly, the implementation of a PBL program, known as Expeditionary Learning, at an inner city and racially diverse school in Boston had the effect of raising test scores. Specifically, the 8th-grade students of this PBL school achieved the second highest scores in the district on the Stanford 9 Open Ended Reading Assessment. A corresponding study in Maine found that schools, which used PBL, demonstrated noteworthy increases on the Main Educational Battery after only one year of this approach. These schools achieved gains that were three to ten times higher than the state average (Bell, 2010).

Summary

Because of the changed nature of the global economy, students must be offered a 21st century learning approach that fosters the development of effective communication and collaboration skills, cultural competency, proficiency in the use of technology, innovative and creativity skills, and the capacity to find solutions to problems (Larson & Miller, 2011; Trilling & Fadel, 2009). The development of these skills in students will enable individual workers and nations to remain competitive in the 21st century knowledge economy (Rotherham & Wollingham, 2009; Trilling & Fadel, 2009). The *future ideal story* thus sees the fostering of 21st century skills through a backward design of the curriculum which seamlessly aligns teaching, learning, and assessment. This backward design of curriculum may involve the implementation of rich assessment tasks in the form of project-based, problem-based, and challenge-based learning. Because

standardized testing is here to stay, the application of the *Story Model* foresees a future direction of assessment that includes *both* standardized testing *and* rich assessment tasks.

CHAPTER SIX: SUMMARY, CONCLUSION, AND IMPLICATIONS

Globalization has had a significant impact on assessment practices, and it will continue to influence the future direction of assessment. As already noted, globalization may refer to the phenomenon that encompasses the imminent move to cultural homogeneity, a group of forces that are leading to the disappearance of the nation state and the creation of a world polity, and the irreversible advance of information technology (Dale, 2000). These global forces have impacted education as they have brought about the rapid growth of international and national assessments, and the resulting consensus that large scale assessments provide a benchmark to the strengths or weaknesses of an education system (Kamens & McNeely, 2010; Wiseman 2010).

In addition to becoming a key feature of accountability, a nation's performance on international tests has come to represent an indicator of its economic productivity and social welfare in the face of cross-national comparisons and the dissemination of results. In other words, the results have become associated with the economic, political, and social success of a country or region (Wiseman, 2010). International institutions that administer tests such as PISA and TIMMS have perpetuated this view, and its paradigm of a knowledge-based economy, competition, and accountability (Pineda, 2010). The OECD, for instance, has championed PISA as a key component of the global knowledge economy in its testing of students to determine whether they have the 'literacy' to meet its challenges (Spring, 2009). The *global story* of international assessment can be seen in the fact that over seventy countries have participated in the TIMMS or PISA in 2003.

The spread of international testing has also influenced the curricula of national school systems with its focus on accountability and competition. The dissatisfaction with

international test results has lead policy makers to adjust national curricula so that there is a greater focus on testing (Pineda, 2010; Spring, 2009). Education policy makers have adopted "more prescriptive and to-the test curricula" (Pineda, 2010, p. 345) due to anxieties or fears of not being competitive enough in the global economy. The expanded use of national or local assessments, and thus accountability, may be linked to international testing and its resulting impact on policy and practice (Pineda, 2010). In the case of Ontario, the impact of international testing can be seen in the EQAO-administered standardized tests that parallel PISA and TIMMs in their focus of literacy and numeracy (Volante, 2007).

Though international and local testing has dramatically expanded due to globalization and the need to be competitive in a global knowledge economy, a paradox emerges as standardization may in fact impede a workforce or nation's competitiveness. The shift from an industrial economy to a 21st century knowledge economy requires an education system that develops the following skills in students: critical thinking and innovation, communication and collaboration, initiative, flexibility, social and cross-cultural literacy, et cetera (Trilling & Fadel, 2009). In other words, the global revolution demands individuals who can think creatively, innovate, communicate well, adapt, and work well in teams (Robinson, 2011). Ironically, educational accountability and standardization, which have arisen due to globalization and the need to be economically competitive, may be viewed as an obstacle to this aim and as having the opposite effect (Trilling & Fadel, 2009). The approach to education which emphasizes test-taking, facts, and rote learning is ineffective and an impediment to the development of 21st century skills that are required to live and work in the knowledge economy (Trilling & Fadel,

2009). The administering of standardized tests results in teaching and learning practices that have the following effects: the hampering of reasoning, creativity, and problem solving; damage to self-esteem and motivation, and the negation of collaborative learning (Meaghan & Casas, 2004).

Using the conceptual framework of the *Story Model*, this study addresses the gap or limitation of standardization—which may be viewed as the Old Story—in developing the 21st century skills which the knowledge economy demands. This paper examines the emergence of a New Story in the form of assessment *for* learning as a counter trend to large scale assessment. Assessment *for* learning, which includes assessment *for* learning, *as* learning, and *of* learning, constitutes both a *cultural story* as evidenced in the *Growing Success* document and a *global story* as it is practiced in a number of jurisdictions around the world. Studies have shown that assessment *for* learning presents advantages for student learning as it enhances student motivation, self-esteem, initiative and self-direction, as well as collaboration and dialogue. In turn, the practice of assessment *for* learning unintentionally fosters the development of a number of 21st century learning goals.

The paper also presented specific learning and teaching strategies by which 21st century skills may be explicitly developed. In order to move to the *future ideal story* of 21st century skills development, it is imperative that teachers alter their approach to instruction and assessment (Rotherham & Willingham, 2009; Trilling & Fadel, 2009). Strategies such as problem-based learning, project-based learning, and challenge-based learning may be utilized to develop 21st century skills. Teachers can effectively foster these skills through a backward design of curriculum that aligns instruction, teaching, and

learning. Specifically, teachers must work toward designing their curriculum so that there is a connection between the mandated curriculum, the KNOW/DO/BE, and assessment *for*, *of*, and *as* learning (Drake, 2012).

Conclusion

The Story *Model* lies on the premise that the present story is experiencing a flux or change—or possibly even a crisis. According to this presupposition, two antithetical or diametrically opposed sets of beliefs, values, and behaviours compete for dominance. The *Story Model* postulates that "there is an ongoing dialectical process by which players attempt to synthesize or reconcile these two opposite polarities" (Drake, 2010, p. 4). One thus needs to consider moving to both/and rather than affirming one or the other when anticipating the future. Drake (2010) writes that

> it is important that the good from the Old Story be recognized and carried forward. On the other hand, we need to recognize what is realistic in the preferred future story so that we can bring that forward also. Through this dialectical process, the next story is created. (p. 4)

In this regard, there exists a competition between the Old Story of traditional learning and the New Story, which is a student-centred and constructivist learning approach. The new knowledge economy requires education to move away from the traditional approach to learning which is characterized by the following methods: teacher-directed, direct instruction, time-slotted, one-size fits all, competitive, text-based, summative tests, and learning for school. While integrating some of these practices, a 21st century approach to learning would lean toward the following practices: learner-centred, interactive exchange, skills, questions and problems, practice, projects, on-demand,

personalized, collaborative, global community, web-based, formative evaluations, and learning for life. Regardless, it is necessary that one approach is not completely abandoned for the other; in other words, there needs to be an integration of both learning approaches. For example, an emphasis on applied skills does not mean that there is a disregard for the teaching of basic skills or the learning of content knowledge and facts. Both the learning of content and skills must occur in a way that finds an appropriate balance for each learner. In this regard, the learning of 21st century skills does not mean that the teaching of content and knowledge is abandoned, as it is required to address complex problems (Trilling & Fadel, 2009). The important aspects of the Old Story are thus recognized and brought forward.

The both/and model can also be applied to determine the New Story or future direction of assessment. As noted, the application of the *Story Model* involves the synthesis of the Old Story into the emerging New Story. It is quite apparent that large-scale testing for the purpose of accountability will remain a component of the education system well into the future. There is evidence to suggest that the opposition of Canadian educators toward standardized testing is abating (Drake, 2010). Drake (2010) discovered "that teachers and administrators can be quite positive about large-scale test results when they use these data in evidence-based practice to inform future directions" (p. 8). In this respect, the New Story of assessment entails *both* standardized testing and classroom-based assessment in the form of A*f*L, as opposed to *either* one or the other. This New Story also encompasses a change in the outlook toward assessment from that of an evaluative tool to one where the purpose of assessment is to improve learning (Drake,

2010). The Future Ideal Story would involve standardized testing and new modes of assessment in the form of PBL.

Implications

The implementation of A*f*L and new modes of assessment such as PBL would have implications for practice with respect to classroom culture. In addition to the implications for practice on the part of educators, there are a number of areas that need to be considered by policy makers as well.

An implication of fostering 21st century skills would be to ensure that all students have the opportunity to acquire them, as opposed to only a select or privileged group. This enterprise would require two essential components. Firstly, policy makers and educators would have to guarantee that the instructional program is complete so that content is not discarded in seeking to develop skills (Rotherham & Willingham, 2009). Secondly, provinces or states, school districts, and schools must reconsider "how they think about human capital in education – in particular how teachers are trained" (Rotherham & Willingham, 2009, p. 18).

The implementation of A*f*L and new modes of assessment such as PBL would involve a change in how the teacher perceives the classroom culture. The type of learning environment necessitated by such forms of assessment requires one that may be unaccustomed or perplexing for teachers and students. Innovative forms of assessment require an adjustment to the "classroom contract" which entails those rules that guide and legitimize the behaviour of teachers and students. The teachers would have to transform a practice which reinforces a delivery/recipient relationship in the classroom. In other words, a new contract would require students to move away from being "passive

learners" to ones who are "active learners" that take responsibility for their learning (Black et al., 2004). With respect to instructional practice, teachers would need to find an effective balance between being the "sage on stage" who delivers information and the "guide on the side" who helps pupils with their research, findings, and sharing of discoveries from learning projects (Trilling & Fadel, 2009).

In teaching 21st century skills, educators must also acknowledge that content and skills are not separate, but rather are closely interconnected (Rotherham & Willingham, 2009). The most effective educators realize that students cannot "develop and use skills without a core body of knowledge" (Silva, 2009, p. 632). They also recognize that there needs to be a focus on higher order thinking and problem solving if their students are going to acquire the "ability to learn how to learn for themselves" (Silva, p. 632). Although it is generally agreed that both content and skills are necessary for the development of 21st century skills, teachers must be able to meet the curricular challenges of effectively teaching both.

Teachers need to recognize that the development of 21st century skills cannot occur through the teaching of *any* content. Due to the fact that not all content is commensurately important to a field, students must be presented with knowledge that is central to a discipline. In trying simultaneously to develop content and thinking, teachers should not make the mistake of stressing advanced, conceptual training too prematurely in instruction. The learning of students follows a predictable course that should be taken into consideration. Because students' knowledge tends to be superficial and limited in their initial encounter with a concept, they can only apply an understanding to a unique

situation once it has been presented in a varied and thorough manner (Rotherham & Willingham, 2009).

An implication of teaching 21st century skills for research would involve the further study of how these skills can be taught more effectively. The practice of outlining skills and urging the teaching of content will most likely lead to failure. Although the above study suggested means by which to develop 21st century learning goals, there would be advantages to learning which skills can be the most realistically taught. Rotherham and Willingham (2009) write that "if we deem that such skills as collaboration and self-direction are essential, we should launch a concerted effort to study how they can be taught effectively rather than blithely assume that mandating their teaching will result in students learning them" (p. 19).

An implication for practice would involve finding teachers who can effectively teach both content and 21st century skills (2009). Rotherham and Willingham (2009) argue that "greater emphasis on skills also has implications for teacher training" (p. 19). It is not sufficient to simply have the objective of teaching 21st century skills; teachers need to have the means by which they can be successful at developing them in students.

Despite the fact that problem-based and project-based learning are widely known by teachers and available in pedagogical textbooks, teachers rarely use these approaches even though they acknowledge their effectiveness. Many teachers fail to implement such student-centred approaches because they pose classroom management problems, demands for teachers to be knowledgeable on a wide-range of topics, and requirements for quick decision making (Rotherham & Willingham, 2009). Black and William (2010) write that teachers will not adopt any practice or idea, regardless of its appeal or

extensive support in research, if the ideas are laid out as general principles that simply expect the teacher to convert into practice. The daily classroom lives of teachers are too hectic for most, with the exception of a few, to translate principles into practice on their own. Teachers must be able to see "a variety of living examples of implementation, as practiced by teachers who they can identify from and from whom they can derive confidence that they can do better" (Black & William, 2010, p. 88). In other words, they need to see examples of more effective teaching in practice (Black & William, 2010).

In this context, teachers need to be given time for collaboration and the ability to share expertise with fellow colleagues. In order for 21st century learning to become a reality, professional development or training constitutes a fundamental component (Rotherham & Willingham, 2010). Black and William (2010) argue that transforming teachers' practice does not commence with a widespread training program for all, as this approach would imply that there are enough "experienced trainers," which is highly unlikely. Rather, the initial step would involve a training or professional development program for a small number, yet diverse group of local schools; these schools would include both primary and secondary, as well as inner-city, suburban, and rural ones. The teachers of these schools would be given extra support in the form of "time to plan the initiative in light of existing evidence, to reflect on their experience as it develops, and to offer advice about training others in the future" (Black & William, 2010, p. 88).

According to Rotherham and Willingham (2009), "what teachers need is much more robust training and support than they receive today, including specific lesson plans that deal with high cognitive demands and potential classroom management problems of using student centred methods" (p. 20). The notion that teachers already know how to

implement student-centred approaches that foster 21st century skills negates their complexity and the lack of capacity in the area. Teachers require professional development which engages them in "an iterative process of planning, execution, feedback, and continued planning" (p. 20). The development of teaching expertise with respect to 21st century skills will require considerable time and effort. For Rotherham and Willingham (2009), "none of this will be successful without broader reforms in how teachers are recruited, selected, and deselected in an effort to address the whole picture of education's human capital challenge" (p. 20).

A direction for future research could entail a focus on how teachers view and understand their roles in preparing students for standardized tests, as well as developing 21st century skills. A research study could examine whether or not teachers are able to reconcile any apparent conflict between these two roles. With respect to assessment, research could also study how teachers understand their formative and summative roles, or compare the results of external tests with the in-class assessment results of teachers (Black & William, 2010).

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